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ORIGINAL ARTICLES

FILARIASIS NOCTURNA.*

REPORT OF CASE.

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I presume I may take it for granted, that most of you are acquainted with the condition which forms the subject of this paper by your reading alone, and not through a study of its phenomena at first hand. You will therefore, I hope, not take it amiss, if before reporting the case observed by me, I refresh your memories by a brief recital of some of the leading facts known about this disease.

Filariasis is rare in this country. Cases have however been observed in Key West, New Orleans, Mobile, Charleston, Northern Virginia, and even one case (Dunn) in a woman who had always lived in Pennsylvania. In many parts of the tropics it is among the commonest of diseases. Thus in Porto Rico more then ten per cent. of the inhabitants harbor the filaria, while in Samoa it is estimated that almost the entire population is affected. It is frequently encountered in other islands of the Pacific, in China, India and Africa, in the Philippines, in Central America and the West Indies.

Our information as to the organisms which occasion it, and the relations existing between them and the phenomena of the disease, is far from complete, so that some of the statements current on the subject, although fairly justified, are based rather on analogy and inductive reasoning than on actual observation. Enough however is positively known to permit of a fairly complete presentation of the subject. This information has been gradually pieced together from fragmentary observations, the relations between which were not always at first apparent, and from that fact has arisen a multiplicity of terms applied to the organisms, which, at times, leads to some confusion on the part of the reader.

*Read in the Medical Section, Fifty-first Annual Meeting, Springfield, May, 1908.

Several species of blood-filariæ have been recognized, each with its geographical habitat, such as Filaria Bancrofti, F. loa, F. Demarquayi, etc.

They are nematode worms, agreeing in their general characteristics and in the main points which concern their life-history. While all species mentioned in our text-books invade the human organism, among the common forms only F. Bancrofti and F. loa are known to be pathogenic. The large adult worms of both sexes inhabit the lymphatic channels and nodes, or connective tissues, while the much smaller embryos make their way into the blood where they exist by the million. To the embryos is applied the term *filaria sanguinis hominis,* to which for the common species are added the designations *diurnia, nocturna* and *perstans,* according as they are to be found in the blood during the day, at night or at all times. These terms, be it remembered, do not designate species, but refer to the embryos alone, as they alone exist in the blood.

The species with which we are now concerned, and the only one ever observed in this country (if we except a single observation of Stiles'), is *F. Bancrofti,* the embryo of which is known as *F. sanguinis hominis nocturna.* The latter is from 260 to 300 μ long (1-100 to 1-90 inch) and 7 to 8 μ across (the diameter of a red blood-corpuscle).

We may begin the interesting life-history of this organism with its presence in the stomach of a mosquito. The embryo gains access to the mosquito with its meal of blood, and is first found in the insect's stomach, in which its enveloping sheath is cast off. This *ecdysis* leaves the worm free to penetrate the tissues of its host. Making its way among the muscles of the thorax, it there remains dormant for two weeks or more,* increasing to five times its original size, and developing an alimentary tube. It then becomes active, wandering about among the tissues of the mosquito, and finally finding its way into the head and proboscis,** often in pairs. On being introduced into the lymphatic spaces of man's skin by the mosquito's sting, it makes its way along the lymphatic channels until arrested by a node,—inguinal, axillary or other. Here it develops to adult life, singly, in pairs, male and female, or in bundles of a half-dozen or more. The adult worm resembles a white thread or horse-hair. The male attains to a length of 3.86 cm. (1½ in.) and the female to from 7 to 9 cm. (3 in.). Some of our best text-books give dimensions equal to twice these, erroneously applying to *F. Bancrofti* the measurements of another and distinct species. Adults have so far been found in 11 cases, distributed in the arm, leg, spermatic cord, ovary, epididymis, in hydrocele fluid, and in a lymph-scrotum. There were in the aggregate 43 females and 8 males. But few of these were found intact and complete.*** The only adult worms so far found in this country, were in the case of Lothrop and Pratt.

*Jackson, *Tropical Medicine*, p. 400.
**Geo. C. Low, *Brit. Med. J'l*, 1900, Vol. I, p. 1456.
***Lothrop and Pratt, *Am. J'l of Med. Sci.*, 1900, Vol. 120, p. 525.

The worms having mated, the embryos later found in the blood are viviparously produced in enormous numbers. The latter are actively motile, have a rounded head and a sharp posterior extremity. Each is enclosed in a loose, collapsible sheath, longer than itself, the surviving egg-membrane, within which it moves freely in a longitudinal direction, so that the unoccupied portion either projects beyond the head, or extends behind the tail. The presence of this sheath is fortunate, for it hinders the embryo from penetrating the tissues of its human host as it did those of the mosquito, and thus confines it to the interior of the blood-vessels, where it can never develop into the adult form. As Manson estimates that there must be in a marked case as many as 50,000,000 of the embryos in the blood, the condition would be uniformly fatal could any considerable proportion of these develop into adults. As a matter of fact, however, none of them ever does so, unless they be taken into the stomach of a mosquito, and there pass through the necessary extra-human intermediate stage, the essential factor of which apparently is the loss of their enveloping sheath through digestion.

All of the intra-human stages may exist, and in the great majority of cases actually do exist, without occasioning any symptoms whatever on the part of the host. In fact a large proportion of the apparently healthy individuals in any filaria-infested country will show great numbers of active embryos in their blood. Morbid manifestations are traceable only to the presence of parent worms in lymph-nodes or elsewhere, but even these in the majority of cases remain quiescent. In a certain proportion, however, symptoms develop, sometimes of a grave character. They may be constitutional or local.

Constitutional Symptoms: These are usually sudden in onset, and are often the first to appear; there are general debility and fatigue on exertion, with irregular periodical febrile attacks resembling those of malaria; pain in the back, pelvis and groins, sometimes acute and accompanied by nausea and vomiting. Sometimes mild febrile attacks constitute the only sign.

Local Symptoms: These may be such as can be accounted for on mechanical grounds alone, such as obstruction of lymph-channels with resulting dilatation of lymph-vessels, lymph-oedema and lymphorrhagia. Lymph-scrotum may thus be brought about, or when a lymph-vessel ruptures into the kidney or bladder, chylous urine. Chylocele may result from a break into the tunica vaginalis. As rare symptoms are seen chylous diarrhoea and chylous ascites.

At other times again there supervene graver symptoms of an actively inflammatory nature, such as lymphangitis, often distributed along an extremity, with the usual adenopathy, frequently resulting in abscess, and accompanying fever of septic origin,—the so-called "elephantoid" fever. Deep abdominal pain, with fever, suggests the formation of an intra-abdominal abscess. The inconstancy of these occurrences postulates the existence of a contributory cause which is found in infection with one of the ordinary pus-germs.

Although not perhaps a matter of demonstration, it seems, to say the least, highly probable that tropical elephantiasis is a result of these conditions. This is characterized by immense thickenings of the connective tissues of the legs, scrotum or vulva. Scrotal tumors have been removed weighing as much as 200 pounds and vulvar masses weighing 25 pounds.

Manson* places the sequence of events as follows: "Parent female filaria in the lymphatic stream of the affected part; injury of the filaria; premature expulsion of ova in consequence of injury; embolism of lymphatic glands by ova; stasis of lymph; lymphangitis from subsequent traumatism or other cause (septic infection) in the congested area; imperfect absorption of the products of inflammation; recurring attacks of inflammation leading to gradual intermittently progressive inflammatory hypertrophy of the part."

That other causes besides the premature expulsion of ova may lead to blocking of a lymph channel, was shown** by the finding of a dead adult worm in a lymph-channel, the caliber of which was originally many times larger than the worm, but the latter had by its presence excited the proliferation of new connective tissue from the walls, completely blocking the lumen.

Manson*** asks the interesting questions: 1. How is it that the embryos of this species disappear in the day to reappear at night? and 2. Where do they go? They begin to appear about 5 p. m., are numerous by 8 o'clock, reach their maximum about 12 p. m. or 1 a. m., then begin to lessen and have disappeared by 7 a. m. As they can hardly be supposed to die off, disintegrate, and be reproduced in such enormous numbers every 24 hours, they must retreat from the peripheral into the deeper circulation. The case of a patient who committed suicide at 8:30 a. m., and in whom seventeen parents were found, seemed to answer this question, as the embryos were here found in prodigious abundance in the large thoracic vessels, and especially in the lungs. Some have sought to explain the presence of the embryos in the peripheral circulation at night only, by saying that the capillaries being dilated during sleep permit their easier passage. But Manson pertinently asks why the reverse should be true of the F. diurna. He believes that the phenomenon is an adaptation to the nocturnal habits of the mosquitoes concerned.

No medicinal treatment so far known is of any value. Laveran advised quinine internally and Austin Flint, Jr., methylene-blue. Lothrop and Pratt found that when a drop of hydrocele fluid containing active embryos was mixed with an equal volume of a 1-1000 methylene-blue solution, the organisms remained motile after two hours. When quinine was used in the same proportion and in the same manner, most of the embryos became motionless within a few seconds, and none

*Tropical Medicine, p. 572.
**Lothrop and Pratt, loc. cit.
***Brit. Med. J'l, 1899, Vol. II, p. 644.

showed any evidence of life after three minutes. Quinine, however, when administered to patients suffering from this disease, does not kill either parents or embryos, as it is impossible to introduce the drug into the blood in sufficient concentration. Aside from the palliative effects of rest, the only efficient treatment consists in excision of involved lymphatics and contained worms, when these can be located and are accessible. Attendant difficulties and dangers in the way of permanent obliteration of lymph channels need not be insisted upon. Even when parent worms are successfully removed, the disease is not cured, for in no recorded instance has disappearance of the embryos from the circulation been thus secured, showing that other adults must remain. Nevertheless the results of excision have been satisfactory in the removal of symptoms.

The growth of knowledge regarding this parasite may be summed up as follows:

The embryos of F. Bancrofti were discovered in hydrocele fluid by Demarquay, in Paris, in 1863.

They were seen in chylous urine by Wucherer in 1866.

They were first found in the blood by Lewis in India, in 1870. He proposed the name "Filaria sanguinis hominis."

The adult F. Bancrofti was first found by Bancroft of Australia, in 1876.

In 1878, Patrick Manson discovered that the mosquito was the intermediate host. He at first believed that the infected mosquito depositing her eggs in stagnant water, and dying there, thus liberated the embryos, and that man subsequently became infected by drinking this water. This explanation is still current in some of our text-books.

Geo. C. Low, however, showed, in 1900, that the filaria is introduced into man by the sting of the mosquito.

CASE: Mrs. R., aged 51, of good weight and well nourished, was born on the French island of Guadeloupe in the West Indies, and lived there until her coming to this country last year. Guadeloupe is one of the Windward Antilles, lying in Lat. 16 N. and Long. 62 W., 75 miles north of Martinique, where occurred the eruption of Mont Pelée and destruction of Saint Pierre. The climate is tropical, and several tropical diseases are there endemic. The patient made a continuous voyage from Guadeloupe to St. Louis, arriving in that city on Sept. 22, 1907.

Last December she developed an acute bronchitis, influenzal in type, attended with fairly high temperatures continuing for a fortnight or more, and resulting in emaciation and enfeeblement. In January, and while still confined to the house, there appeared a double acute follicular tonsillitis, which still further debilitated her.

On February 15th a patch of reticular lymphangitis appeared on the anterior aspect of the left thigh, attended by swelling of a group of inguinal glands on the same side, with pain and fever. A phenol

pack was applied, but the condition continued to grow worse, new patches of cellulitis gradually extending down to the knee, while the infiltration became denser and deeper. The pain was severe and the fever ranged between 101 and 102. Later there appeared several small patches on the calf of the leg.

About Feb. 23d, lymphangitis set in on the left arm and rapidly spread downward toward the elbow and upward above the axilla, extending to the trunk until about one-third of the back was involved, making the recumbent posture almost unbearable. The temperature rose to 103 and 104. Lymphatic nodes were swollen and tender. There were nausea, vomiting, and general debility and depression.

Inquiry elicited the fact that the patient had had a number of attacks of lymphangitis, distributed over a period of some twenty-five years, although none that at all approached the present in severity. Former attacks had never lasted longer than a week or so, were attended with but mild fever, and had always gone on to resolution without abscess-formation. It was also learned that a number of persons in her former home had suffered from similar attacks, and that cases of elephantiasis were not unknown.

Putting these facts together, a diagnosis of filariasis seemed all but certain. A blood-smear taken on Feb. 25th in the middle of the day showed an abundant leucocytosis, but nothing further. Dr. E. F. Tiedemann, Professor of Pathology in the Medical Department of Washington University, having kindly proffered his assistance, we repaired to the patient's home at midnight of Feb. 27th. Several thick smears were taken from the lobe of the ear, and at once examined, fresh and unstained, the cover-glass being vaselined about its edge to prevent evaporation. Soon an embryo filaria was discovered, vigorously thrashing the blood-cells about in a miniature tempest.

In form, measurements and other characteristics it conformed exactly to the classical descriptions of F. sanguinis hominis nocturna. Once a red corpuscle happened to lodge exactly across its back, which it fit to a nicety, thus furnishing a natural and reliable foot-rule. After forty-eight hours on the cold slide the organism was still slowly coiling and uncoiling itself. How much longer it so continued I do not know. Henry reports keeping one alive for ten days on a slide in a cool room. Other embryos were secured for staining and mounting.

The disease continued to run an acute course, and soon the right arm became involved. On the inner aspect of the left arm there appeared a series of three egg-sized swellings, flaccid to the touch, and unlike abscesses. They were probably lymph-varices at first, but on March 5th, one of them broke and discharged pus. Meanwhile, and for a period of nearly two weeks more, the fever continued ranging about 103 to 104. By the middle of March abscesses had formed and were discharging on the right upper arm and left groin, the fever meanwhile gradually abating and the lymphangitis disappearing.

At present (May 15th) there is edema of the lower extremities, so that standing and walking are difficult and painful. The prognosis is decidedly unfavorable, since it is very probable that important lymph channels have been obliterated, and that living parent worms remain to wreak further mischief. How long they can remain alive, in other words, how long can the disease persist in the absence of fresh inoculations, is a question. That it may be years, we know, as Lothrop and Pratt's case had been in this country four years when the living parents were discovered.*

The daughter of this patient, a robust-looking girl of 22, who came to the United States with her mother, and had until then always lived on the same island, had an acute lymphangitis of the left arm in January. She, too, had had several attacks in Guadeloupe. A blood examination has not been made in her case, but the symptoms taken with the history seem to justify a diagnosis of filariasis.

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*Note added August 7th, 1908. The patient has now been apparently quite well for a month.

Plate With False Teeth in Sigmoid.—Dr. Samuel T. Earle, Jr., of Baltimore, Md. Mrs. F. H. D., the latter part of August, 1907, while eating ham, swallowed a plate with two false teeth. Ten days later she had a violent attack of pain in the abdomen, followed by a chill and fever; there was no recurrence of this for one and a half months. Since then they have recurred from time to time, but not as severe, nor have they been attended with chill and fever. A skiagraph taken of the lower abdominal and pelvic regions showed the plate in the sigmoid flexure of the colon, on a level with the promontory of the sacrum. Examination through the sigmoidoscope brought them into view at the point shown by the x ray. There was considerable tenesmus, and the passage of a good deal of mucus, also a tendency to constipation. Under the influence of two hypodermics of morphine gr. ¼, hyoscin hydrobromate gr. 1-100, and cactina which produced satisfactory anæsthesia, Dr. Earle was able to grasp the plate, through the sigmoidoscope, with a pair of long alligator forceps, and withdrew it immediately behind the sigmoidoscope. (Transactions Am. Proctologic Society.)

ANGINA PECTORIS.*

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In establishing the diagnosis of angina pectoris, the two important problems presenting are, first, whether or not the attack is truly angina pectoris, secondly, to determine, if possible, the cause.

When an elderly individual is suddenly seized with agonizing substernal pain in the heart region, a sense of constriction, the feeling of impending death, the pain radiating, particularly into the left side of the neck, into the left arm, facial pallor, no shortness of breath, sensorium unimpaired, the forehead bedewed with cold sweat, and when the attack after a short period, with the recession of the symptoms, disappears, or when in such an attack the patient dies, the diagnosis of angina pectoris from disease of the coronary arteries is clear.

The typical case is readily diagnosticated. The attack may be so mild in degree or so obscured with accessory symptoms that much difficulty attends the diagnosis.

To this symptom complex Heberden, one hundred and fifty years ago, gave the name angina pectoris. Ten years later Jenner called attention to associated changes in the coronary arteries and suggested that the affection is due to these changes.

The malady is one of adult life. In women the condition is comparatively infrequent. Huchard (quoted from Osler) in 237 cases found 42 in women. Brain workers, those of large business interest who lead the strenuous business life, who exercise their muscles little, and who so often practice excesses in times of relaxation from business, are the men in whom we so frequently find heart disease and in these we observe angina pectoris with far more frequence than among day laborers. This suggests the importance, as a predisposing factor at least, of lowered nerve resistance.

John Hunter, who, Osler tells us, stated that "his life was in the hands of any rascal who chose to annoy and tease him," Matthew Arnold, Charles Sumner, and Dr. William Pepper, were victims of this disease.

The intensity of the attack varies. In some instances the suffering from the stabbing, boring, griping pain in the heart region is frightful to witness, the patient believing each moment to be his last. The intensity of the pain is no index to the gravity of the condition, for in the gravest form of coronary angina, pain may be all but absent. The pain may be referred to different parts of the chest, the left side of the neck and to the left arm. The pain most frequently radiates into the left brachial plexus, the pain referred to the left shoulder, the inner surface of the left arm and along the course of the ulnar

*Read in the Medical Section, Fifty-first Annual Meeting, Springfield, May, 1908.

and of the internal cutaneous nerves, leaving at times numbness of the third and fourth fingers. Occasionally the pain radiates into the right arm, into the jaw and teeth, the testicle, the anus. Through the medium of the vagus and abdominal sympathetic, symptoms referred to the larynx and œsophagus are observed, the pain of ulcer of the stomach and other affections of the stomach, of cholelithiasis and of abdominal aneurysm may be simulated.

The behavior of the pulse in the attack is variable. Often rapid and tumultuous, 150 to 200 per minute, in other cases reduced in rate, as seen by Neusser, to 28 per minute.

The character of the pulse also differs, sometimes small, soft, compressible; often small, of high tension, regular or irregular. Important is the fact that even in severe attacks of angina pectoris the action of the heart and the pulse may be normal. Not unimportant is the phenomenon that in the individual with heart disease, the persistent arythmia of the interval usually disappears during the attack. Heart murmurs present in the interval, during the attack may not be heard.[1]

Disturbance of respiration does not characterize angina pectoris. Dyspnea is not present. The patient from pain often holds the breath, endeavoring to immobilize the chest, to prevent every movement. Bronchial asthma and the asthmatic paroxysms of heart disease are thus differentiated. Pulmonary manifestations, such as cardiac asthma are seen with angina pectoris, but these follow insufficiency of the heart, the angina, as the asthma, resulting from the underlying condition, arteriosclerosis. Of extreme interest are the cases of angina pectoris, which with the appearance of loss of heart compensation, the anginal symptoms disappear, to be replaced by chronic dyspnea with the usual signs of failing compensation. Musser describes such cases. Following the appearance of myocarditis, mitral insufficiency, or aortic insufficiency in consequence of arteriosclerosis, the angina may disappear. Musser states that the prognosis in angina pectoris is better, if at the same time there is present dilatation of the heart.

The most frequent and best recognized cause of angina pectoris is organic affections of the aortic valve and the aorta, with resulting narrowing of the coronary artery. This form of angina is encountered in arteriosclerosis affecting the orifice of the coronary vessels and the vessels in their course, in fatty degeneration of the heart, gout, diabetes, tabes, in cases of lead and tobacco poisoning, and probably syphilis, where, as Neusser[1] states, vascular disease forms the connecting link between the angina pectoris and the primary disease. Angina pectoris in the earlier stages of aneurysm of the aorta belongs in this class.

The majority of cases of severe angina show these changes in the coronaries, which form the basis of the arterial theory of the attacks, held by most clinicians, notably Potain, and Huchard.

According to Neusser[1] in aortic insufficiency of rheumatic origin in which the aorta remains intact, angina pectoris is of great rarity.

He sees in this a valuable point in the differential diagnosis. He states further that in mitral obstruction and mitral regurgitation, the malady is practically unknown, nor was it present in a number of cases observed by him of combined stenosis of mitral tricuspid and aortic orifices.

Clinically the attack, it is observed, may follow muscular exertion, particularly after meals, exposure to wind, stair climbing, the act of defecation, coitus, emotional excitement, contact with cold, conditions which raise the blood pressure. This suggests that angina pectoris follows ischaemia of the heart muscle. Particularly striking are the cases occurring in comparatively young individuals in whom post mortem, no changes in the aorta or in the course of the coronary artery are found, but at the origin of the right or left coronary artery small atheromatous plaques present, which obstruct the vessel.

The chief morphological changes in the arteriosclerotic process, consist in a combination of degeneration and hyperplasia in varying degrees, principally in the intima. Most investigators agree that in the production and localization of arteriosclerotic changes, mechanical causes play the important role. It appears that increased functional demands upon the vessel wall is a necessary factor in the production of arteriosclerosis resulting in hypertrophy of certain layers of the vessel wall. It is probable that the same influence which induces the hypertrophy of the layers of the vessel wall, longer continued causes the degeneration of these layers. This is the theory of Thoma. Huchard's theory is that alterations in the vaso vasorum are primary, these followed by the changes in the arterial wall. In a few instances it has been shown that arteriosclerosis has its origin in purely mechanical causes and that in all causes leading to sclerosis, mechanical injury to the vessel wall is the most potent. In this connection we may recall the fact that in long continued neuralgia, migraine or neuritis, arteriosclerosis has developed in the affected area. Indeed, Fraenkel of Vienna has induced experimentally arteriosclerosis from neuritis.

Proper blood supply of the muscle is indispensable for the function of the muscle. Veterinarians years ago in France learned that disease of the blood vessels of the legs of horses limited greatly the ability of the horse to use the legs. Charcot later described the affection in man. Subsequently Erb, who had studied a number of cases, brought the condition into prominence. In individuals through whose diseased blood vessels an insufficient amount of blood reaches the muscle, the function of the muscle becomes progressively impaired. Pain appears and the innervation of the muscle is greatly disturbed. Only at rest when the blood requirements of the muscle are less and the diminished amount passing through the diseased arteries suffices is the equilibrium maintained.

To this condition affecting the legs, Erb has given the name dysbasia angiosclerotica (intermittent claudication, intermittent limp). The study of the condition has markedly advanced our knowledge of angina

pectoris as many of the important features are common to both conditions.

According to Erb,[2] the recognition of the condition is based upon the following symptoms: In walking, paresthesia and pain appear in the feet, a sense of tightness, pain and stiffness in the calves of the legs or above. Coldness, pallor, or cyanosis, sometimes a sense of heat, flushing of the skin of the feet, these symptoms making their appearance after a walk of thirty, twenty, and later after a walk of even five minutes, necessitating frequent stops for rest. A short period of rest brings about the disappearance of all symptoms with free use of the legs. Further walking induces the repetition of the scene. Important in the symptomatology is the failure to find the pulse in all or a part of the arteries of the foot, or at least a marked reduction in the volume, sclerotic changes in the artery, vasomotor disturbances, pallor, redness or cyanosis, and coldness of the feet. In the production of this disorder, according to Erb, syphilis appears to play a rather unimportant role, as does alcohol. Of special interest is the fact that in 14 of 45 cases the only cause which could be elicited was the use of tobacco. In these cases syphilis, alcohol, effects of cold and diabetes as causative elements could be eliminated. Erb concludes that in the production of intermittent claudication, syphilis and alcohol are of less importance, exposure to cold of more importance, tobacco occupying the most prominent place in the etiology of arteriosclerosis of the leg and foot. In this connection it may be mentioned that the trouble is rarely seen in women. Potain and Huchard believe the attack of angina pectoris to be due to like cause. If a sclerosis of the coronary arteries is present, upon exertion, areas become ischemic, this causing the heart pain and the heart anguish. In reference to this Kreh[3] states, "it is probable that functional disturbance of the vessel caliber can lead to similar manifestations. Arteriosclerosis leading to dysbasia angiosclerotica, may not be due alone to the anatomical changes in the vessel wall, but to accompanying arterial cramp, the relation bearing a certain similarity to that in angina pectoris. Here the basis of the attack is arteriosclerosis and probably here also following vessel cramp. The all important question whether or not endarteritis can develop from frequent functional changes in the caliber of the vessel pertains to one affection as the other." Every writer upon intermittent claudication emphasizes the importance of tobacco as an etiological factor.

It has been observed that angina pectoris is very frequent in diabetes mellitus. The attacks differ in no wise from the attacks in cases of arteriosclerosis without diabetes. In the majority of cases, according to Naunyn,[4] the diminution of the sugar in the urine following appropriate dietetic treatment, does not influence the seizure; however, errors in diet influence the condition badly. Intermittent limp is also frequently seen in this affection and is looked upon as a stage in arterial disease preceding diabetic gangrene.

Although angina pectoris is regarded a blood vessel affection, it is closely associated with disturbance of innervation and changes in the heart muscle, in fact, it has been urged that in the beginning it is less a vascular than a nervous affection (angiospasmus). Advanced degeneration of the coronaries has been found in cases in which the symptoms of angina pectoris were very slight, or, in fact, wanting. On the other hand in cases with slight anatomico-pathological changes in the coronaries, the symptoms of angina pectoris have been severe. This fact is offered as an argument that angina pectoris is a heart neurosis, or, heart neuralgia.

Wounds, exposing the heart have, in a few instances, permitted the examination of the heart, the organ found to be insensitive to direct painful stimulation. If pain results from areas of ischemia in the heart, the greatest pain should result from total plugging of the coronary. From experimentally induced embolus of the coronaries, Vogt concludes that the intense pain can come only from the ischemia of the muscle. Many believe the attack is to be traced to the occurrence of sudden bloodlessness of heart muscle to which the arteriosclerosis of the coronaries predisposes. The faulty blood supply of the heart with the accompanying irritation of the ganglia and sensory nerve is suddenly evidenced, if greater demand be made upon the musculature of the heart.

Huchard believes that true angina pectoris is always the angina of exertion (*stenocardie d'effort*), while functional angina is not induced by exertion. Tobacco angina, according to this authority is true angina for the reason that the paroxysms are provoked by over-action of the heart.

All authorities, however, do not concur in the opinion that ischemia resulting from sclerosis alone, is sufficient to explain the pain. "Is it sufficiently clear," asks Bruer, "how in the patient with arteriosclerosis, the effort to meet the increased demand upon the muscle, leads directly to ischemia of the extremity or of the myocardium. Is there not a connecting link wanting? and is it settled that the pain in intermittent limp, and in angina pectoris really and only originates in the relatively anemic areas, (musculature and nerves) that the pain in the various tissues of the extremity or in the myocardium is really the pain of ischemia alone?"

Sclerotic vascular changes appear not to fully explain the condition; but that thereto another factor, functional in character, must be added, a factor related to the vasomotor nervous system. It is believed that through the sclerotic process the nerves of the vessel wall are altered. If, as in all muscular exertion, the tension in the vessel is raised, the vessel nerves react with a reflex cramp through which not only muscle pain, in consequence of the ischaemia of the corresponding muscular area is manifested, but in addition vessel pain. Nothnagel laid particular stress upon the vessel pain and saw in angina pectoris, predominantly *Koronaralgie,* induced by spastic contraction of the

coronary arteries, the radiation of the pain caused by the cramp extending into the neighboring vascular areas. It has been observed in the attack, in some cases, that the pulse in the left radial artery is smaller.

As it appears that sclerotic changes in the artery are insufficient to wholly explain the attack of angina pectoris, that in addition we must include vessel cramp, the question arises whether or not vessel cramp alone, unsupported by the sclerotic condition, can bring about this complex of symptoms. If this is the case it appears to me that we have here the explanation of so-called pseudo-angina,—attacks which may disappear when the toxic agent is no longer operative, or the nervous condition of the patient corrected.

Neusser narrates the case of a policeman who was stabbed in the back near the transverse process of the third dorsal vertebra, with injury to the third dorsal nerve or ganglion. Soon after the injury most intense heart anguish appeared with the feeling that the heart stood still. The pulse, which was full, forceful and regular in the recumbent posture, sank repeatedly to 42 beats per minute; the bodily temperature about 100 F. A careful study of the sensation of the skin of the arm and chest showed that the third left dorsal nerve near its emergence from the spinal canal had been injured. As the dorsal nerves contain branches from the sympathetic which lead to the plexus aorticus, plexus pulmonalis and to the organs of the chest, the conclusion seemed warranted that the above described attacks resulted from the injury, particularly when, after healing of the wound, the man suffered no more attacks, the heart action returning to normal, the man recovering completely.

When we consider the causes precipitating the attack, arteriosclerosis present or not, we see that these causes are of varied character. As has been stated the attack may follow muscular exertion, exposure to wind, contact with cold, may come on after meals, and after mental emotion.

In the patient any one of these causes may bring about a paroxysm. It is seen that the exciting cause finds a point of attack in the peripheral nervous system, skin, muscle, vessels, mucous membrane of respiratory and digestive tract as well as in the central nervous system. When impressions differing so widely in character and made upon such different areas give, reflexly the same effect, that of vessel cramp, we are able to understand this only by assuming that certain nerve centers which control these vascular areas react easily and in a pathologically increased manner to such irritation. This leads, according to Sihle,[5] to the logical conclusion that angina pectoris is a reflex neurosis. A pathological reaction is to be expected when the centers are diseased, when they are hyperesthetic. The assumption of such a central hyperesthesia best explains the occurrence of functional angina, in which there is found neither in the heart nor aorta sclerotic vascular lesions. This hyperesthesia may be caused by syphilis, alcohol, tobacco and fol-

low acute infectious diseases, particularly influenza. Arteriosclerosis alone can cause impairment of the functions of the nerve centers, and enables us to understand why in the presence of irritable centers, emotional excitement, favors the appearance of the attack.

One hundred years ago, Latham called attention to false angina. Pseudo-angina is the term applied to the cases separated by Osler into two groups, the neurotic and the toxic, the former embracing the hysterical and the neurasthenic cases, the latter the cases due to abuse of tea, coffee and tobacco. Women supply the larger number of the cases of the first group.

Hysterical angina pectoris is in many instances readily diagnosticated, in some instances with greatest difficulty. During the attack the patient may appear pale, the face drawn with suffering, the extremities cold, the forehead bedewed with cold sweat. Such an attack suggests true angina. Others complain of heart pain without changes in the facial expression or without pallor. These are to be regarded as cases of functional angina. As is so frequent in hysteria, the cardinal symptoms are accompanied with many accessory symptoms, such as dyspnea, with greatly increased rate of respiration, hiccough, palpitation, aphonia, retching, vomiting, visual disturbance, cough, globus, meteorism, hyperesthesia of precordium, hemiesthesia, finally spells of laughing or crying, eructation, expulsion of flatus and functional bladder disturbance. After the attack pain often persists at particular points.

In this form the substernal pain is often described not as a feeling of tightness and compression, but as a feeling of fullness, a distension of the thorax. The attack may be periodic, appearing spontaneously or after mental perturbation, the exciting causes most varied in character. The attack persists usually two or three hours or longer. A number of attacks may appear in the day, the general conditions of the individual remaining uninfluenced. The simplicity of the symptom-complex in true angina pectoris contrasts strongly with the flood and multiplicity of symptoms seen in hysterical angina. While in true angina the patient in his agony anxiously avoids every word and every motion, in the hysterical form the individual is often noisy and complaining. When hysteria develops in the individual with heart disease or with aortic disease, the diagnosis is difficult and many times more than the probability cannot be diagnosticated. However, careful consideration of the circumstances preceding and following the attack, the appearance of complete anesthesia of the skin of the left arm, contraction of field of vision, the fact that in spite of repeated attacks long continued the general condition of the patient is uninfluenced, and a study of the general make-up of the individual may lead to the proper diagnosis. Huchard's differential table between true and false angina, as given in Osler's practice, will prove of much service.

Tobacco angina appears to be a condition linking true angina pectoris and functional angina. It has been experimentally shown that

nicotin in small doses stimulates the ends of the vagus in the heart. It is believed that the continued use of tobacco induces minute structural changes in the vessel walls, preparing the way for subsequent arteriosclerosis. Neusser,[6] describes a case of myocarditis in an individual who smoked much tobacco. This case he observed carefully and was enabled to study the heart post mortem. He declares this to have been a case of myocarditis from excessive use of tobacco. In describing a second case, carefully studied, he suggests that it is the auricle which is particularly affected in chronic tobacco poison. Erb takes the position that much smoking leads to arteriosclerosis. Klemperer states that nicotin without doubt works damage to the vessels of many men. Individuals with arteriosclerosis in whose history much smoking appears, should positively abstain from the use of tobacco. The intensity of vertigo, intermittency of the pulse, extreme pallor, coldness of extremities, tremor, visual disturbance, headache, the long duration of the attack are symptoms which aid us in the diagnosis of tobacco angina.

Impairment of digestion is common in those who use tobacco. The resulting nutritive disturbance contributes greatly to the arteriosclerosis.

An interesting group of cases of functional angina is considered by Neusser. "A particular variety of the functional form," he states, "are the pseudo-anginas of the neurasthenic as they appear in the anemic and so often in medical students and physicians who auscult themselves. Here we have less an angina pectoris than an anginaphobia, with all sorts of abnormal sensations in the heart region and along the spinal column, a feeling of heaviness in the chest and distension of the heart, dysphagia, pain in the neck and shoulders, cases in which the psychical element plays the prominent part, the thoughts and the occupations capable of provoking the attack."

Paroxysmal precordial pain, indescribable, almost painless precordial oppression, occur in dilatation of the heart, aneurysm, adherent pericardium and in mitral disease. Great difficulty may be encountered in distinguishing between these attacks and true angina pectoris.

Reverting to the subject of pain in the affection we can best understand this from the study of the diagrams by Head and Gibson. The smaller diagram shows the spinal segment as the junction for heart and systemic nerves, stimulation of which is interpreted by the cerebral cortex as pain, etc. Thus it is that although the seat of the trouble is the heart, "through an error of psychical judgment," as Head expresses it, "the pain is referred not to the heart, but to the hand and arm which is so richly supplied with sensation."

Note the nerve connections of the left side of the heart with the spinal segments from which the left brachial plexus springs, and the greater number of connections between the left arm, chest, etc., and left cardiac ganglia, than in corresponding structures on the right side.

Patients subject to this affection should live a quiet life, free from care, and should avoid excitement and muscular exertion. Most im-

portant is the proper consideration of the psychical condition of the patient. He should be encouraged, reassured. To inform him that the arteries of the heart are hardened, calcified, may rob him of his peace of mind for the remainder of his days. Constitutional diseases, syphilis, gout, diabetes, etc., should not be overlooked. Dietetic and hygienic measures should be most carefully observed.

Medicinally, inhalation of nitrite of amyl is employed during the attack, advantage being taken of its vasodilator properties. Osler directs that if in a minute or two relief is not obtained, inhalations of chloroform should at once be given. Less evanescent in effect is nitroglycerin, which may be employed hypodermatically. The vessels of the head and cranial cavity are most influenced by the nitrites. Ortner, for this reason, employes them cautiously in the cases in which the cerebral arteries are highly atheromatous, as the pressure within the cranial cavity from the hyperemia resulting from the use of nitrite of amyl may cause hemorrhage. English physicians were the first to employ erythrol tetranitrate, or tetranitrol. This is supplied only in tablet form. The dose recommended is 0.02 to 0.04. In the period between attacks good results are claimed by Ortner from 0.02 in divided doses, per day. To prevent recurrence of the attacks, diuretin (theobromin sodium salicylate) is recommended most enthusiastically by Breuer and by Ortner. Breuer's plan is to give 3.0 to 4.0 per day, in some instances 5.0. He gives to some patients 2.50 per day for months the dose at regular intervals over the twenty-four hours.

Unfortunately the most frequent cause of angina pectoris is arteriosclerosis, a condition which we at this time are powerless to meet. Schur and Wiesel[8] have shown that a relation exists between muscular work and the activity of the chromaffine system of the suprarenals. The blood of dogs was examined before, after, and while working the treadmill. Adrenalin was found in the blood of the working animal. Adrenalin is elaborated only in the chromaffine cells and raises arterial tension. In chronic nephritis, with increased arterial tension and hypertrophy of the heart, these same investigators[9] found that there is constantly present marked hypertrophy of the chromaffine system. If in chronic nephritis the hypertrophy of the chromaffine system bears any relation to the increased blood pressure, adrenalin should be present in the blood of those suffering nephritis. These investigators have shown that this is truly the case. By chemical test, but particularly by exposing the enucleated frog's eye to the action of the serum from nephritic cases, the presence in the blood of adrenalin, even in dilutions of 1 in 20 was shown. Neusser, in his work on the diseases of the suprarenals, mentions two cases in comparatively young individuals in which the clinical picture led to the diagnosis of Bright's disease. Cancer of the suprarenal was revealed at autopsy. It was concluded the high arterial tension observed in the cases resulted from pathologically increased secretion of the pressure raising principles of the suprarenals.

As vascular changes have been repeatedly observed in those suffering with affections of the suprarenals, it is most probable that a very close relation exists between the chromaffine system and arteriosclerosis. Hypersecretion of the chromaffine cells can cause the increased blood pressure and through cramp of the vaso vasorum bring about the secondary anatomical changes. Looking into the future, Neusser suggests that perhaps the exhibition of the principles of the suprarenal body, to the appropriate animal, antibodies may be developed which for the prophylaxis and treatment of hypertension, will prove availing.

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BACTERIA IN THE ATMOSPHERE.—Dr. Flemming, of the German army, has been studying, by means of balloon voyages, the distribution of microscopic organisms through the atmosphere. He finds that the current assumption of the absence of germs from the upper strata is entirely erroneous, and that bacteria attain, and continue to live at, elevations of more than 13,000 feet. Nor does the number of bacteria diminish in proportion to the increase in elevation, as might be expected. On the contrary, it remains nearly constant for the first 1,600 feet. Within this limit the number is 12.9 per liter (365 per cubic foot) while from 1,600 to above 13,000 feet it averages 0.37 per liter (10.5 per cubic foot). The number of germs is affected by the duration of sunshine, but no effect due to rain or snow could be detected. It is a striking fact that the organisms found in the upper strata are chiefly of species that secrete pigment. This is probably an effect of sunlight, the pigment being secreted as a protection against ultra-violet rays, and is analogous to the darkening of the human skin on high mountains.—*(Scientific American.)*

A REVIEW OF THREE HUNDRED URETER CATHETERIZATIONS IN THEIR RELATION TO DIAGNOSIS AND TREATMENT.*

BY BRANSFORD LEWIS, M. D., AND C. E. BURFORD, M. D., OF SAINT LOUIS, MO.

It was not long after Simon of Heidelberg did his first nephrectomy for fistula of the ureter in 1869, that some of the bolder surgeons who dared follow his example, found that pain is not a reliable symptom, nor an unerring guide in locating disease of one or both kidneys; but that referred pain is entirely misleading in diagnostic interpretation.

Literature records a few of the many fatalities following the removal of the only functionating kidney. Profiting by these mistakes, the careful operator was led to expose both kidneys in all operations before removing either.

The great loss of time, danger of increased manipulation, and inaccuracy of idea gained from the external gross appearance of the kidney as compared to the information obtained from the excretions of its glomeruli and tubules, showed the need of a safer and simpler means of diagnosis.

The urine segregator was the result of the first feeble efforts in the right direction.

Not until Greenfeld (1874) and Powlik (1886), Brenner (1889) (single), first catheterized the ureters in the female by specula, and Boisseau du Rocher in 1889 perfected a cystoscope through which he was able to do synchronous double ureter catheterization in male and female alike, was the collection of uncontaminated specimens of urine from the two ureters made practicable.

The present day perfection of the catheterizing cystoscope, rendering ureter catheterization easy for the operator and comfortable for the patient, without general anesthetic, makes the surgeon who removes a kidney without first employing this indispensable aid to diagnosis, guilty of gross neglect, to say the least. To him who believes this a needless warning, let the answer be given that during the past year a surgeon of prominence acknowledged on the floor of a medical society that he had removed a diseased kidney, only to find at post mortem, an infantile, non-secreting kidney on the other side. Such a mistake could readily have been made in the following case, without repeated cystoscopy and ureter catheterization: The patient sought advice in December, 1906, on account of a slight urethral irritation during urination. History: Male, aged 33 years, married, rather sturdy, and the picture of health. Father died of tuberculosis recently. While a student at Ann Arbor, Michigan, in 1896, he was treated for urinary tuberculosis by Dr. Victor

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Vaughan, by injections of nuclein, and pronounced cured. Five years ago he developed pulmonary tuberculosis and was under the care of the late Dr. Solly of Colorado Springs. He apparently recovered completely, but has since slept out doors, in Saint Louis, summer and winter. The urine was quite cloudy, and pus and tubercle bacilli were found at the first examination. Cystoscopy and catheterization of the right ureter secured urine containing much pus and many tubercle bacilli, as proven by stained specimens and Guinea pig inoculation. Although a splendid view of the whole bladder was secured, no left ureter opening could be found. Four subsequent cystoscopic examinations were made, three by the direct and once using the indirect method, but no left ureter opening could be found. On two occasions injections of indigo-carmine were given and the beautiful blue color was seen to come from the right side, but nothing from the left side, leading to the conclusion that there is an obliterated ureter and kidney on the left side.

Iodoform emulsion was injected through the catheter into the right kidney pelvis on three occasions.

It is interesting to know that the temperature of this patient keeps absolutely normal, 98.4° to 98.8°; that he has been observed now for one and a half years, and is still working hard, enjoying apparent health, passing many tubercle bacilli and spoiling an unfavorable prognosis.

The following mistake in diagnosis was cleared up and patient cured through the aid of ureter catheterization: Case No. ——, male, aged 33. Referred by Dr. F. H. Brown, Billings, Missouri). This case had been diagnosed urinary tuberculosis by a surgeon and a bacteriologist of Saint Louis, in 1899, and treated as such for several years. June 8th, 1907, cystoscopy with double ureter catheterization was done and clear urine secured from the right side, while very light purulent urine was secured from the left side, the pus containing colon bacilli. An x ray by Dr. Carman showed a large irregular shadow in the left kidney region. On incision it proved to be a stone, which is here presented. The patient had never complained of pain in the back, all the irritation being referred to the bladder. He made a complete recovery.

On account of the narrow limits of kidney therapeusis in general, it is probable that differential diagnosis by means of ureter catheterization will always overshadow treatment by the same method.

The treatment of diseases of the kidney pelvis and ureter through the ureter catheter seems so far to be confined to a rather small percent of cases, but these few cases are by no means unimportant.

Perhaps the most noteworthy case where an ideal result was obtained, was that reported by Dr. Bransford Lewis in the *Medical Record*, October 6th, 1906, in which three ureters were found and catheterized in a case of recurrent gonorrhea of five years' standing in a male, aged 24 years, who had been to New York and other cities for treatment, only to have the same recurrence after each course of treatment.

At the first catheterization healthy urine was secured from two ureters and gonococcus-laden pus from the third ureter, which was entirely cleared up after a few catheterizations and lavage of the kidney pelvis, with a gonocide. During the two years since the treatment he has married and remains well.

While not so startling in anomaly of anatomy, still just as important in point of improvement and recovery, are some cases of simple pyelitis, relieved by lavage of the kidney pelvis.

Case No. 256, male, aged 22 years, came from Oklahoma to be treated for pains in the back and cloudy urine, which did not clear up on vesical irrigations. Double ureter catheterization secured urine containing pus and large diplococci from each kidney. After four flushings of the kidney pelvis the right ureter urine was entirely clear of pus and cocci, and the left ureter urine contained only a very few leucocytes and no cocci. The mixed urine from the bladder has cleared up since the last ureter catheterization and lavage, so that the patient has passed urine free from pus for several months.

Case No. 293, female, aged 44 years, mother of five children. General health good until August, 1907, when she had an acute enterocolitis, passing bloody stools for two days. She soon recovered, but continued to have some pain in the back until October 16th, when she was seen, with more severe pain in the back, burning during micturition, temperature 99.5, pulse 96, and very nervous. Urinalysis showed considerable pus, some short, thick bacilli (probably colon bacilli), a few granular casts, some round and transitional epithelium, and a small amount of albumin. Vesical irrigation did not improve the condition, so cystoscopy and double ureter catheterization were done, showing about an equal amount of pus coming from each kidney. The kidney pelves were flushed with argyrol solution. Five days later only a very few pus cells were obtained from the pelves, which were again irrigated. After six days no pus was to be found in the catheterized urine from the bladder. The backache disappeared with the pus, and only a faint trace of albumin could be found in the urine. The patient has remained well to the present time. This case is of special interest, as the infection of the kidney pelves seems directly traceable to the attack of enterocolitis, two months previous.

Case No. 162. Female, aged 36 years. Referred by Dr. Nietert. In 1902, she had severe ureter colic of left side. In bed two weeks. Several colics since that time, once in the right side. Cystoscopy and double ureter catheterization showed clear, normal urine from the right ureter, and very thick purulent urine from the left kidney. The pus contained several kinds of bacteria. Ten times the left ureter was catheterized, and the kidney pelvis irrigated, with marked improvement each time. At the last catheterization, the urine from the left ureter was perfectly clear to the naked eye, and only a few leucocytes were found microscopically. The patient was relieved of all pain and discomfort.

An interesting case was No. 276, boy, aged 12 years. Referred by Dr. Menestrina. He had been crushed between a car and the wall in a machine shop, fracturing the pelvis, injuring the left kidney and rupturing the bladder wall posteriorly and extra peritoneally. Cystoscopy revealed a rent in the bladder, clear right ureter urine, and urine of very light specific gravity, and quite cloudy from the left ureter. Microscopic examination showed this clouding to be an enormous number of lymphocytes with not a polynuclear cell in the specimen. Next day the kidney was incised, but no pus found in its pelvis. A subsequent ureter catheterization showed the left kidney giving down heavier urine, which was almost free from leucocytes.

Obstructions to the ureter catheter may be due to bends or folds in the ureter, strictures or calculi. The following are illustrative cases:

Case No. 224, male, aged 47 years, married. Referred by Dr. Harry Hall, for pains in the back and pyuria, with fever. Cystoscopy was done, right ureter catheterized, securing urine of very light specific gravity, and containing an abundance of round epithelium; but impassable obstruction was met at one-half inch in the left ureter. Flakes of pus could be seen exuding from the ureter. Dilatation of the ureter opening was intended, but the alarming condition of the patient, who was rapidly becoming uremic, stampeded a consultation in favor of a hasty nephrotomy.

About eight to ten ounces of pent-up sanguino-purulent urine was expelled from the kidney, on incision. This organ was found practically destroyed (see specimen) by pyelonephritis, the other kidney participating in the inflammation, as shown by the subsequent post mortem. The patient died in uremic coma about forty-eight hours after the operation. The autopsy showed the left ureter dilated to the size of a small sausage and tightly filled with blood clot. A very definite and narrow stricture was found within the first three-quarters of an inch of the lower end of the ureter. (See specimen.) The specimen demonstrates the fact that the stricture could easily have been dilated and we believe life could have been greatly prolonged had this procedure been carried out before uremia supervened. The right kidney was also inflamed, and right ureter somewhat distended, but there was no definite stricture at its outlet.

Case No. 287, male, aged 20 years, unmarried, mail clerk. Referred by Dr. William Engelbach. He had suffered with pyuria and hematuria more or less constantly for nine years. The x ray had revealed no shadows. Cystoscopy was done and the left ureter catheter met definite obstruction on two occasions at one inch. A flexible metal olive tipped bougie was used and the olive tip forced through the obstruction with a sudden jump. Several times it was withdrawn and repassed, the olive tip definitely engaging in the stricture each time. The stricture was further dilated with a larger bougie, which brought on a very severe ureter colic lasting a few hours. The ureter catheter secured some urine

containing a few pus cells from the ureter. At a subsequent catheterization the catheter passed the stricture readily, draining urine free from pus. The patient was relieved for the most part from pains in the back, but owing to what is probably a tuberculous seminal vesiculitis, he has an intermittent pyuria, accompanied with vesical irritation.

Case No. 261. Male, aged 40 years, married. Referred by Dr. ———. Patient suffered from ureter colic of left side four years ago; moderate pain since then until one and one-half years ago, when it became severe. One attack in January, 1907, caused convulsion lasting ten minutes. He never had pain in the right side until one week previous to the examination. The voided urine was very concentrated and was "full" of uric acid crystals. The case was thought to be one of uric acid crisis. Cystoscopy and double ureter catheterization showed clear urine from the left side and some light obstruction on the right side, which was passed on the second attempt. The right kidney pelvis was thoroughly flushed, and within a few hours the patient passed five uric acid ureter stones ranging in size from the head of a pin to the size of a split pea. One subsequent catheterization was done, after which three similar stones were passed. The vesical ends of the ureters were dilated with the dilating forceps. The patient was completely relieved and has had no further difficulty when last seen several weeks afterwards.

Case No. 374, female, single, aged 30 years. Referred by Dr. N. L. Johnson for cystoscopy. The right ureter gave normal urine, but the left ureter catheter met obstruction at one inch which could not be passed. The x ray showed a small shadow at that point, and Dr. Bartlett removed the stone from the ureter, by the extraperitoneal route, proving to be no larger than a clover seed. It is interesting to note that so small a stone could completely obstruct the passage of the catheter.

The cases of urinary tuberculosis have nearly all been traced to one or both kidneys; one notable exception, however, is thought to be worthy of mention.

Case No. 222; aged 36 years, mother of two children, wife of a physician, brought her husband from another city to be examined for urinary tuberculosis, which was easily demonstrated, and traced to the testicles and seminal vesicles as the primary foci. An examination of the urine of the wife also showed the presence of tubercle bacilli. Cystoscopy revealed healthy mucous membrane of the bladder, except a congestion at the bladder neck and small ulcers at the beginning of the urethra. Both ureters were catheterized but no pus cells nor microorganisms were found from either side.

Iodoform emulsion was used in the bladder, and prescribed for the patient to use regularly. After two months, and six months respectively, the patient was again examined and a very few tubercle bacilli found in the urine, although the general health was good. Patient not seen since.

No other tuberculous focus could be located in this case and the evidence seems to be rather strong in favor of an ascending infection through the urethra, which seemed to be the chief source of the infection.

The time limit of this paper will not permit an extended recital of findings or results in the three hundred and thirty-three ureter catheterizations we wish to report. The few cases reported in detail have been selected with reference to the various classes of conditions found.

A brief tabulation of some of the findings might be of interest:

The Condition.	*No. of times.*
Pyelitis of one side only (pus)	139
Pyelitis of right side only (pus)	77
Pyelitis of left side only (pus)	62
Pyelitis of both kidneys (pus)	43
No pus in urine from either ureter	54

Organisms Found.	*No. of times.*
Colon bacilli	4
Tubercle bacilli	16
Staphylococci	2
Gonococci	1
Other diplococci	5
Other mixed infections	2

CONCLUSIONS.

1. Cystoscopy with ureter catheterization can safely and easily be done in the office under local anesthesia in 95 per cent of cases where it is indicated, without so much as a urethral chill; the time of manipulation being an important factor.

2. Catheterization of the ureters is clearly indicated and should be carried out in all obscure conditions of the upper urinary tract; such as, hematuria, pyuria not yielding to treatment, ureter colic, and preceding all operations on the kidneys and ureters.

3. In all cases of x ray shadow in the ureter regions, a skiagraph should be taken with ureter catheter made of material that casts a shadow, in the ureter as far as it will pass, making an index pointing directly to the stone, before operation is undertaken.

4. Most cases of pyelitis are amenable to treatment in the early stages, by pelvic lavage; and we have yet to see the case where actual harm was done by such procedure.

5. Flushing of the ureters with mild antiseptic solutions should be carried out as a routine prophylactic procedure, before the ureter catheters are withdrawn.

6. Many cases of ligation or incision of the ureters in removal of large tumors of the abdomen, might be avoided by the preliminary introduction of catheters in the ureters.

KIDNEY STONES; SOME PATHOLOGICAL, CLINICAL AND SURGICAL PHASES.*

BY A. H. CORDIER, M. D., OF KANSAS CITY, MO.

With the advancement made in gall bladder, stomach and appendiceal surgery, we are all well informed, as the journals are constantly teeming with well written articles on these subjects by our best surgeons and pathologists. In fact, gastroduodenal-hepatic-appendiceal surgery has overshadowed many equally important surgical problems among the latter being surgery of the kidneys, especially that phase having to do with the presence of stones in these organs. However, the progress along this line has been equally as great.

The thorough work of Howard Kelly with the ureteral catheters, the wide-spread investigation of Henry Morris, the carefully carried on bacteriologic and pathologic findings of the pathologist, the painstaking chemical pursuits and the improvements in the use of the x rays, have all reduced the understanding of these cases to an almost scientific certainty. The surgeon can approach these cases with a feeling of much security as to the probable findings as well as the ultimate outcome of the case.

The urine holds in solution or suspension inorganic and organic substances in varying proportions: If from any cause these substances are increased beyond the point of saturation or from any change taking place in the character of the urine that makes that fluid refuse to hold in solution or suspension these bodies, a precipitation is the result. This deposit, if only slight in amount, may be within the sphere of a physiologic function but when this deposit of inorganic salts is sufficient to be detected macroscopically the condition known as gravel is produced. Not a very unusual occurrence. This "sand" is usually passed with the urine, producing only slight pelvic, ureteral or bladder irritation; however, in some cases this vesical irritation terminates in an aggravated acute or chronic cystitis. Many of the so-called lumbago attacks are in reality due to pelvic and upper ureteral irritation from this "sand."

It from any cause either from an infection or small amount of blood or mucus, these little gritty bodies become agglutinated, the nucleus for a stone is formed. This stone may pass easily into the bladder or its size or shape may be such that the passage is attended by the most intense pain, or its bulk may prevent its passage at all. Some of these retained in the kidney may grow to an enormous size, one in my work weighing over four ounces.

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Uric acid, carbonate of lime, phosphate of lime, urate of soda and ammonia, cystine or cystic oxide, enter into all calculi either alone or in varying proportions in individual calculi, the nucleus having one of the above salts with concentric layers of one or more of the other. These secondary deposits are the outcome of bacterial changes produced in the pelvis of kidney. Uric acid and oxalate lime are most frequently met with as uncomplicated calculi as they are deposited from acid (normal) urine.

The largest stones are usually made up of phosphate and ammonium magnesium phosphate the direct outgrowth of an infected pelvis or ureter, this infection being frequently due to the presence of colon bacilli, gonococci, tubercle bacilli or the ordinary saprophitic or pyogenic bacteria. The bacillus coli communis is most frequently found in the early history of stone formation. Yet Morris doubts its etiologic bearing in these cases and believes its presence is merely accidental after the stone is formed or is forming. I am rather disposed to attribute a direct causative factor in stone production to the presence of this germ in many cases. Yet the minor resisting point produced by the presence of the calculus must be taken into consideration as offering a favorable site for these germs to thrive in. The number of stones present varies from a single, many ounce phosphate stone, to many small uric acid or oxalate of lime calculi. In some of my cases there have been many small stones but in most instances there has been but one stone and that usually a large one. All big stones were at one time mere grains of debris. As we improve in our ability to diagnose and have these cases operated on early, we will find more small single stones. In most cases, the stone or stones will be found as shifting foreign bodies in the pelvis of the kidney; occasionally the calculus will be found firmly attached to the dome of a calyx, or sides of the renal pelvis. Some of my cases have resembled in size and shape a small Irish potato with several nodules attached, while others have been flat butterbean or perfectly round in shape. I have in my collection, one large carbonate of lime stone; it is as smooth and white as a piece of polished marble. Others are dark brown and as rough as a pineapple.

The chemical composition of the stone in most of my cases has been either oxalate of lime, phosphate of lime or uric acid, in the order named in point of frequency. Occasionally a small stone is found in the substance of the kidney; in such cases an abscess is found surrounding the stone; in this instance, in all probability, the stone formed originally in a calyx and imbedded itself in the parenchyma as it developed. The parenchyma certainly does not offer a favorable site for primary stone development. I have found good-sized calculi in abscess cavities in the kidney with no communication with the renal pelvis. In a few instances I have found a stone in a perinephritic abscess, there being no pyuria in the case.

Some authors give statistics showing the relative frequency of stone in both kidneys, varying from 58 per cent. (Leguen) to 50 per cent. (Albarran). These cases are in part post mortem findings and Morris justly concludes that after death, findings would naturally be expected to show a larger proportion of bilateral stones. In none of my cases have I found a stone in the opposite kidney, in fact, in not a single case have the symptoms pointed to both kidneys, and the post operative progress of the cases have substantiated this conclusion based on the symptoms. Morris' individual experience being only 10 per cent. bilateral stones, he concludes that a constitutional disease that predisposed to the formation of stone in the kidney would be expected to develop bilateral calculi, but adds that the kidneys eliminate the stone-forming salts in varying proportions. This being true, if both kidneys are healthy, the one eliminating the larger quantity of salts would be most irritated and thus the agglutinating nucleus forming material would be present in greater quantities in that kidney.

These stones may be found at all ages. It is indeed, a very hard matter to strike an average on this point, when one recalls the fact that a stone may lay quiescent in the renal pelvis for years and then give rise to symptoms demanding an operation. We are often asked by patients, if drinking this or that water has anything to do with the formation of stones in the kidney. This is a hard question to answer, as we know in certain localities vesical calculi are more prevalent and we must admit that many bladder stones have their nuclei formed in the renal pelvis. In other words, the condition favorable to stone formation is quite common but few, comparatively speaking, have them. I once had a lady patient who passed, some days, large quantities of "sand" from the kidneys; this kept up for months without producing a symptom or forming a calculus. Had she gotten an infection or any other condition in the pelvis of the kidney that would have increased the agglutinating substances, as blood, pus, disintegrated epithelium or albumin, a stone would in all probability have formed quickly. If a calculus, once formed in the pelvis of the kidney, would produce only pain by its presence, nephrolithiasis would not be of so grave a character. Like many other pathologic processes, the later complications are far more grave than the original disease. A stone in the pelvis may not produce these complications for a long time; however, its presence should be looked upon as would any other foreign body in a cavity lined by a mucous membrane or a serous lining. Sooner or later an infection is inaugurated and a pyelitis, a pyelonephrosis or calculus anuria results: Complications more serious than the original pathology, and all constituting urgent pleas for early diagnosis and timely surgery.

If an infection does not take place the stone may block the ureter and produce a transient or permanent hydronephrosis and atrophy of the kidney of that side, thus seriously crippling the opposite organ. In some instances grave suppurative processes and urinary infiltrations into the

perirenal structures take place. In one of my cases the kidney had become adherent to the diaphragm, the lung likewise to the same structure, the pus from the kidney finding an exit through the bronchus and mouth. The patient passed a half pint of pus and urine from his mouth, daily, for weeks prior to the nephrostomy. The pus and urine ceased escaping from the mouth after the operation. In two or three of my cases the kidney has been converted into a multilocular pyogenic cyst, the whole of the parenchyma being destroyed by the infection and pressure atrophy.

Early in my surgical experience I operated on a case for impacted stones; I found the kidney practically replaced by a mass of dense adventitious tissue with the stone imbedded in the center. The opposite kidney was doing the work of both. In removing this mass, my patient came near bleeding to death as the whole perinephritic territory was a collection of blood vessels. Where there has been produced extensive destruction of the epithelium and retention of this product, cholesterine particles are frequently found floating on the surface of the fluid removed, or even in the urine escaping by the natural channel. In dealing with the symptoms produced by a nephritic calculus one has a large range both in variety, location, intensity and obscurity. With the typical nephritic colic cases we are all familiar but when one realizes that the typical cases are rare, the necessity for a knowledge of the unusual is apparent. In the typical cases of renal colic due to the presence of a calculus, the pain varies in its intensity from a mere uneasiness to the most excruciating suffering, the intensity depending on the size of the stone, its location, shape and surface markings. If the stone is imprisoned in a calyx the symptoms will not be so severe as if it engages in the ureter. A sharp, angulated stone, pressed into the ureter, may produce intense pain in the back and down along the course of the ureter, with the urine accumulating behind it, and from slight ureteral spasm it is disposed to continue its downward course; however it may become lodged and a sacculation of the pelvis or atrophy of the kidney result, or, in some instances, if the stone is close to the kidney, it may become disengaged and drop into the dilated pelvis and the symptoms produced by its attempted passage quickly disappear. The same patient may never have another severe colic spell, yet the calculus continue enlarging until it attains several ounces in weight. The latter symptoms are those of an atypical kidney stone. In all cases presenting obscure symptoms pointing to the kidney, a carefully gotten clinical history should be obtained, also the attack of renal colic from which the patient suffered in the early formative period of the calculus should not be lost sight of.

I have had a number of cases in which the initiatory symptoms dated several years prior to my seeing the case, with long periods of quiescence. The referred pains of a renal calculus are very misleading unless one is very careful in his analysis of the same. Pain in the glans, penis, testicle, bladder or along the courses of the anterior or genitocrural nerve, is of frequent occurrence. Many patients are treated for

lumbago, neuralgia, and cystitis, when the origin of the symptoms is in the pelvis of the kidney. In the suppurative cases constitutional symptoms of a grave character may overshadow the local pathology and lead to an error in diagnosis, such as tuberculosis, typhoid or pyothorax.

In the so-called quiescent cases a history of some disturbance in the region of the kidney is usually obtainable, such as uneasiness in the back, this increased by exercise, riding on rough roads, little attacks of malaise, a change in the quantity and color of the urine as noticed by the patient, and the presence of a few pus and blood corpuscles in the urine. In all such cases the urine should be examined carefully for blood and pus. A careful analysis of all the obscure symptoms should be made as the wrong kidney has repeatedly been opened on the evidence of a referred pain. The pain is always more severe and persistent on the affected side and the tenderness more marked over the diseased side. Of course we must always think of the possibility of there being bilateral stones.

Intestinal and stomach disturbances are of rather frequent occurrence but not more so than in many other abdominal diseases where there is a chronic sympathetic irritation. A long-retained stone in the pelvis of the kidney is almost sure to produce a pyelitis of a more or less extent, hence the presence of pus in most of these cases. The pus in a unilateral stone case is usually in acid urine. A long-retained quiescent stone may completely block the ureter and a large pyonephrosis result with absence of pus in urine. A calculus anuria may be the outcome of a unilateral stone. Blood in the urine in microscopic quantities is usually present and is a valuable diagnostic symptom.

In some instances a profuse hemorrhage may occur. This is rare. The bleeding is usually during or soon after an attack of colic, yet a stone too large to engage in the ureter may by changing its position as the result of a jolting, cause a hematuria.

Up to within the last three years, my experience in the use of the x rays to detect the presence of a stone was limited to a few select cases with thin abdominal walls and large compact stones, and the ability of the patient to remain immovable for forty to fifty minutes, but recently I have had the presence of a small stone depicted on the plate in a fairly well nourished patient in forty seconds. Our x ray colleagues are keeping fully abreast of the progress made along other lines. I am fully convinced that with rare exceptions a fair sized kidney stone can be detected by the proper use of these mysterious rays. However, I place more weight on the combined laboratory and clinical evidence than on the x ray alone.

Time, limit and space in this paper precludes a detailed description of the technique of x ray and ureteral examination in suspected stone cases. A detailed description of the surgical procedures resorted to in these cases would take up much more space and time than at my disposal; however I desire to state that these cases are purely surgical, with rare

exceptions, and should be so classified. The operative procedure is one of the safest in surgery and if done early the restoration of the normal function of the kidney is to be expected in nearly all cases. Late operations are as a rule, successful, in so far as concerns the patient's life, but many of the late cases are left with badly crippled kidneys and partial invalidism.

DISCUSSION.

Dr. Ernest G. Mark, Kansas City: These papers are both of such excellent quality that it is almost impossible to add anything in the discussion of either one. The paper by Dr. Cordier was extremely concise, and took in practically all that can be said in such a short time on the subject. I regret that he did not lay any stress on the examination of the urine. In regard to the catheterization of the ureters, it is interesting to note the progress made in the segregation of the urine. It is a procedure of great importance and should be utilized in all these cases. Whether you use the air method or water method, direct or indirect method, is of very little importance. It has been my good fortune to use the means of irrigation of the pelves in something like twenty or thirty cases, and in all I have had good results. There is no question of the value of this method of treatment.

Dr. Bransford Lewis, St. Louis: According to the usual study of disease we study symptoms, pathology, diagnosis and treatment. According to my estimate of the respective importance of these things, I would study a urinary disease under the symptoms, pathology, diagnosis, diagnosis about nine more times, and then treatment. We often hear the question, "What do you do for so and so?" and I always say, I do not know what on earth to do for a case until I have made a complete personal examination and diagnosis. I introduce here a patient who came under observation some time since. In 1899 his trouble was diagnosed urinary tuberculosis. He lived under that diagnosis with many evils. That diagnosis was an error which, if not cleared up, would have sent him to his grave, because his left kidney was being destroyed by a calculus, from day to day and from month to month. That diagnosis was made by two men very prominent in our community, a surgeon and a pathologist. The actual condition of affairs was that he had stone in the kidney, which was cleared up by ureter catheterization about a year ago and we took out a large stone from his left kidney. I will pass around the stone. The kidney was much enlarged and showed pyonephrosis. We left it in and he has recovered in a very marked way, and has been able to prosecute his work ever since the nephrotomy was done. Very often in these cases the trouble is not referred to the kidney. In this case, Mr. Brown had never had any pain in his kidney. All of his complaint was of the lower urinary tract, especially the bladder. Dr. Cordier speaks of analysis of the symptomatology, but I say that in this case we could not have diagnosed the case by relying upon the symptoms.

Dr. Burford, in closing: Perhaps all of us have heard mention made of the sounding instrument, which is nothing more than a catheter attached to a stethescope. That has been discarded. It is a very ridiculous procedure, as you get so much noise from the bougie passing through the cystoscope that you can tell nothing about the tip striking a stone. We have all heard of the mistakes made in using the x ray in confusing the shadows from lymph nodes, arterio-sclerosis, and other things. These mistakes could all be avoided by using the x ray while the ureters are catheterized with metal stilettes in the catheters. I disagree with Dr. Cordier that manipulation in the ureter and bladder is dangerous. The point is mentioned in the paper that the length of time for manipulation is very important in the matter of reaction. If it is done quickly, as a rule there is no reaction.

Bacillus Carriers.—It is stated upon authority that about 4 per cent. of all typhoid patients become bacillus carriers. In an examination of over 1,700 persons, one authority found 23 typhoid carriers and of this latter number 11 had had no history of typhoid fever. Dr. Geo. L. Soper, of New York, investigated one instance of bacillus carrier which showed that at least seven outbreaks of typhoid fever, with 26 cases and 1 death, occurred in the last seven years as a result of contamination of food by a seemingly healthy cook. As a result of this investigation the cook has been taken into custody by the New York City Department of Health and bacillus typhosus isolated from her stools. Dr. Harrington said this case was the first one reported in this country but that many instances had been discovered in Europe. He cited the well-known case in Strassburg of a woman who kept a bake shop. Every employe who came to work developed typhoid shortly after arrival, and upon examination the woman was found to have carried typhoid organisms for about six years. She prepared the food which her employes ate. Another continuous series of cases, which Doctor Harrington referred to, occurred in a small town in Alsace. Case after case of typhoid fever occurred until the authorities made an investigation and found that they were due to a servant who was a typhoid carrier. He also referred to an insane asylum with 250 patients, where cases of typhoid fever were constantly occurring. One of the inmates, with a history of typhoid, died of some other disease, and at autopsy the typhoid organism was found in pure culture in the gall bladder. (Conference of State and Territorial Health Officers with the United States Public Health and Marine-Hospital Service.)

TRAUMATIC RUPTURE OF THE BLADDER.*

BY H. C. DALTON, M. D., OF ST. LOUIS, MO.

Traumatic rupture of the bladder is not of such frequent occurrence that the general practitioner sees several cases. The first accurate description of the lesion in point was presented by von Roonhuysen in 1676, although rupture of the bladder was not unknown to the ancient writers. At the present time about ten cases are reported annually; many of the cases are never reported, hence it is difficult to estimate the frequncy of the accident. Of 8,367 surgical cases treated at the Episcopal Hospital of Philadelphia from January 1, 1900, to January 1, 1905, there were but three suffering from rupture of the bladder. About two cases of the latter affection are met with among the 9,000 surgical cases treated annually at the Cook County Hospital.

The predisposing causes of rupture of the bladder are: (1) Alcoholism; (2) sex; (3) distended bladder; (4) disease of the bladder; (5) urethral stricture; (6) age.

Alcoholism predisposes by increasing the urinary secretion, blunting consciousness, producing abdominal relaxation, and exposing its patient to bladder distention and trauma. It has been found that more than 90 per cent. of the patients are males. The lesion occurs most frequently between the twentieth and fortieth years; Cropper's patient was four years of age, while that of Robinson was five. Alexander has expressed the opinion that rupture never occurs unless the bladder is distended; Bissell's patient had, however, urinated a few minutes before a cake of ice, weighing 350 pounds, fell upon the lower part of his abdomen, producing an intraperitoneal rupture of the bladder. Lange and others have cited similar cases. It is obvious that disease of the bladder predisposes to rupture.

The exciting causes of rupture are: (1) Blows; (2) falls; (3) kicks, etc.

In one of Bissell's cases, the patient fell a short distance alighting upon his left buttock; operation showed an intraperitoneal rupture of the bladder. Bayard Holmes reported a similar case. In Alexander's opinion the bladder lesion is due to the forcing backwards of the distended viscus against the promontory of the sacrum; in some of the cases it is due to *contre-coup*. Extraperitoneal rupture is not infrequently due to a fragment of the fractured pelvis, or to separation of the pelvic joints. In 107 of Bartel's 179 collected cases a fracture of the pelvis was present.

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When we recall the fact that the weakest point of the bladder is its summit, it is not at all surprising that more than 85 per cent. of the cases of rupture of the bladder are intraperitoneal. The rent is usually on the upper posterior surface of the viscus. In nine of Ashhurst's 110 collected cases it was both intra- and extraperitoneal. When the original force fractures the pelvis, the bladder lesion is usually extraperitoneal. This was true in 75 per cent. of Ashhurst's cases.

The size and direction of the laceration are quite variable. In the extraperitoneal cases the laceration may be five inches in length. The intraperitoneal cases vary from one-half to over four inches.

The clinical manifestations are not always clear. The most constant are, (1) a pressing desire to urinate, but inability to pass anything, save a few drachms or ounces of blood or bloody urine; (2) sudden onset of severe pain in penis and lower abdomen; (3) more or less tenderness and rigidity in hypogastric region; (4) more or less shock depending on the size and location of the rupture; and (5) the subnormal temperature and increased pulse rate. Catheterization does not relieve the pressing desire to urinate. Marnoch and others have reported cases in which catheterization evacuated clear urine. In a few of the cases the patient was able to urinate, and the urine was free from blood. A review of the reported cases shows, however, that in more than 85 per cent. of the bladder lacerations the urine is bloody. The severity of the shock depends on the degree of peritoneal soiling and the presence or absence of complications, *e. g.*, fracture of the pelvis. The position assumed by the patient is often very striking. Lange and others have tabulated cases in which the patient was unable to assume an upright position, but was compelled to assume a crouching-sitting posture. Johannsen has called attention to the peculiar shaped area of dullness found in the suprapubic region in cases of extraperitoneal rupture of the bladder.

The diagnosis is not always easy, although the mere history of recent injury, and the presence of a pressing desire to urinate with inability to pass anything except a few drachms or ounces of bloody urine, combined with pain and tenderness in the lower abdomen, should suffice to guide the medical attendant to the seat of trouble. The fact that a patient who has been on a debauch, awakens with pain in the hypogastrium and inability to pass clear urine, suffices to cause us to more than suspect a traumatic rupture of the bladder. Catheterization should be done in all cases of recent injury; especially so when urinary symptoms are noted.

In a monograph read before this Association, Dr. Babler called attention to the importance of making a digital examination in all obscure abdominal cases. This is especially true in cases of suspected vesical rupture. It will also enable us to determine whether or no the tip of the catheter has passed through the rent in the bladder. We may be able to feel the spicula of bone in cases of extraperitoneal rupture.

Morton has suggested that we use hydrogen gas, Keen advocated the injection of filtered air, and Wier proposed the injection and subsequent withdrawal of sterile water, to ascertain the presence or absence of a rupture of the bladder; but continued experience proves the tests to be both dangerous and useless (unreliable).

The diagnosis of traumatic rupture of the bladder must rest on the history of the accident and the clinical findings. As previously stated, the sudden onset of severe pain in the penis and hypogastrium, the pressing desire to urinate, the inability to urinate satisfactorily, the passage of a small amount of bloody urine, the subnormal temperature, and the finding revealed by rectal palpation, should suffice to lead us to the seat of trouble. In those cases in which the urine is clear, the increasing severity of the pain, the abdominal tenderness, the peculiar posture, the changed temperature and pulse rate, and the picture as a whole, will guide the competent practitioner.

The prognosis depends on the time and character of the treatment. Previous to 1855 the accident was considered hopeless. In 1883 Ullman collected 143 cases treated expectantly with but two recoveries. In 1904 Dambriu and Papin collected 78 cases treated surgically, with 34 deaths. Of Ashhurst's 110 collected cases of intraperitoneal rupture of the bladder treated by operation, the mortality was 42.7 per cent. Morris cites a case of spontaneous recovery. In Ledderhose's remarkable case an intraperitoneal abscess in communication with the bladder was incised on the 17th day and the patient recovered. Quick's patient was operated upon ten days after the accident. Recovery followed.

Death is usually due to sepsis. It may be due to shock or hemorrhage. Since more than 90 per cent. of the fatal cases are due to peritoneal infection (sepsis) it follows that early, proper surgical intervention should reduce the mortality to less than 5 per cent. The future will prove this to be possible.

The treatment of traumatic rupture of the bladder has been placed on a satisfactory basis. In 1716 Wogt mentioned the possibility of suturing bladder wounds. In 1826 Grandchamps succeeded in suturing ruptured bladders of animals, and demonstrated the fact that if the mucous coat was included in the suture, leakage would invariably follow. Walters of Pittsburg, was the first to operate successfully on a case of ruptured bladder; the bladder was not sutured, but drained suprapubically and also by catheter per urethra. In 1876 Willett sutured an intraperitoneal rupture of the bladder, but leakage followed and the patient died. MacCormack of Kentucky, is credited with performing the first successful suture in America.

The danger of surgical intervention lies in delay and in improper technique. Early operation is the watchword. Since more than 85 per cent. of the ruptures are intraperitoneal, it seems justifiable to expose the posterior wall of the bladder in all cases where an intraperitoneal rupture appears to be present; the cave of Retzius should be exposed first, in all

cases where the lesion seems to be extraperitoneal and in cases complicated by a fracture of the pelvis. The muscular and peritoneal coats must be brought into good apposition. Usually, it will be found easier to begin the sutures at the upper end of the laceration, using the upper sutures to draw the lacerated portion into view. The lower end of the laceration especially, must be sutured with great care. Chromic catgut or linen will be found preferable, although it is not so much the material employed as its durability, and the effectual closure of the wound. The danger of employing unprotected gauze drainage is exemplified by the case reported by Foederl, in which intestinal obstruction occurred in the fifth week. If the patient is operated upon within a few hours after the accident, an intraäbdominal drain does not appear necessary. In all cases the drain should be small and protected by rubber. The patient should be catheterized every three or four hours, or a permanent catheter placed in the bladder per urethra.

Perineal drainage will be found efficacious in some of the extraperitoneal cases. It has been employed in quite a few of the intraperitoneal rupture cases. A review of the literature will convince the most skeptical that early surgical intervention is destined to reduce the mortality of traumatic rupture of the bladder to less than 5 per cent.

Case. In February, 1902, I was called in consultation with Dr. S. J. Barker of St. Louis, to see a young man, eighteen years of age, who had been run over by a loaded wagon. I saw the patient an hour after the injury. He was severely shocked at the time of the injury, and when I saw him still showed that he was considerably depressed. His pulse was about 100, and weak. Temperature, 97½ F. Examination of the abdomen showed a very slight, red streak over the lower portion. This was, however, slight, considering the injury, and far less than I expected to find. He complained of a constant desire to urinate and an inability to do so. Catheterization gave a very little bloody urine. The patient stated that he had not urinated for four or five hours prior to the injury.

I operated on the patient as soon as I could make the necessary preparations. A transverse rupture of the bladder was found, about three inches in extent, and about two inches from its summit. The pelvic cavity was flooded with urine. Interrupted Lembert catgut sutures closed the wound of the bladder. The sutures were placed about four to the inch. The urine was carefully mopped out with gauze sponges; but the cavity was not irrigated. A large rubber gauze drainage tube was placed immediately behind the bladder.

The patient did beautifully until the second day when his temperature rose to 100½ F. As his bowels had not moved for two days before the operation, I gave him an active purgative after which the temperature fell to normal and remained so. Recovery was uneventful. The drainage tube was removed on the third day.

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CYSTOCELE.*

BY GORDON A. BEEDLE, M. D., OF KANSAS CITY, MO.

Cystocele, bladder hernia, or anterior vaginal prolapse, is a generally conceded sequence of lesions of perineal structure associated with rectocele and uterine prolapsus or displacement, more commonly found in the female of multiple deliveries rather than the mother of a single child and rarely, if at all, among the women who have never known the pleasure of fetal delivery.

If such be the etiology of cystocele, are we just and satisfied to place the entire blame on the pelvic floor. Unquestionably the continuity of the perineum and adjacent tissue offers a valuable aid in assisting to maintain the pelvic contents; that aid is demonstrated by the results following lacerations through the muscles and fascia sufficient to inaugurate a beginning hernia of the pelvic contents. Unattended, the cervix slips forward and downward, stimulated on its way by apparent weakening of its supports, each straining muscular effort increasing the deviation; in accordance, the muscular and peritoneal supports lose their tonicity and yield to the extra labor thrown upon them; likewise the broad and round ligaments yield in proportion to their power of resistance, and the uterus drags down pulling with it the anterior vaginal wall with the attached bladder. Such a condition coupled with direct laceration, or tearing of the ant. vag. wall from its subjacent attachments during the delivery, is briefly the general conception of a cystocele formation.

While conceding the increased susceptibility due to gradual impairment of both muscular and peritoneal supports, through lessened resistance from the impaired flooring beneath, the question of cystocele occurrence through causes foreign to the obstetrical field is barely worthy of consideration; in other words, influence brought to bear, as trauma, to normally weak or mal-posed pelvic organs resulting independently of perineal laceration: A basis for counter-support, such as the perineum, through the continuity of tissue resistance, is of vital importance while, on the other hand, a study of the anatomical arrangements of the various organs of the body clearly defines nature's chief intention—that of position maintenance through suspension.

All repair work of the pelvic outlet, from the beginning of surgical aid in such cases until the present, has varied to as many ideas as the weakened tissue could give conception. With each succeeding step experience and study have advanced our progress, until to-day the counsel of the majority does not cleave to one set of ideas, or any pet typical

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operation, as a panacea for all cases, irrespective of the degree of involvement or impairment of the neighboring organs, but strives toward one essential point which, I believe, is the foundation of our success at this work,—that is, normal anatomical reconstruction; in other words, reuniting separately the various layers of tissue which have become separated, in as normal position as anatomical knowledge will permit.

Our present general acceptance of the cause of cystocele, in the vast majority of cases, has been derived chiefly through our anatomical understanding of the arrangement of the contents and their requisite maintenance in position. All stages of danger may result in every childbirth, from the most extreme tears to the partial giving way of the fibers with no apparent superficial lesion. The formation and size of the head, or vaginal canal, with degree of resistance or elasticity of the tissue, all play an important part in determining the extent of injury that will result. In brief, a consideration of the musculature of the pelvic floor at delivery, it is reasonable to conceive that the tension increases as the lower portion of the vaginal canal is reached, thus putting on equal resistance that portion of the levator ani known as the terminal fibers of the internal division of the pubo-rectalis, or levator vaginæ, as this muscle encircles the vagina and extends its fibers in continuity through the sphincter ani, chiefly in its lateral anterior portion, much thinner than the lateral walls of the same muscle, laceration is made more eminent at this point following the superficial tear.

The trigone may give way with the severing of the levator fibers, the continuity of the sphincter with the levator vaginæ be separated, permitting the bowel to prolapse in the form of a rectocele, or the tear may be still more extensive and become complete. The degree of danger done the perineum as a support rests mainly with the amount of damage done the levator ani.

The bladder with its peritoneal and subperitoneal tissue attachment to the uterus and anterior abdominal wall, has also an outer covering of rectovesical fascia, from which also the outer coat of the vagina is derived; this fascia forms the anterior and lateral ligaments of the bladder; the lateral ligaments are folds reflected back on the levator ani one on either side. Weakening of the fascia at delivery, coupled with lost tonicity of the levator, to which it is anchored, lessens its control over bladder dilation, and with general weakening of the connective tissue, makes this a susceptible point for complication following the dragging down of the uterus, which results secondarily to the unattended perineal injury. Naturally, the uterine prolapse is a demonstration of insufficiency of tissue tonicity or strength as a whole. We expect much of the so-called peritoneal ligaments but more of the muscular supports, such as the round, uteropelvic, and uterosacral. All do their share to maintain position in unison with the perineal muscles. Remove the support of the perineum and various degrees of prolapse of the entire pelvic contents follows in proportion to the amount of tear interfering with the function

of the muscular sling formed by the levator and fascia, or the degree of resisting power of the tissue above; the bladder drawn down by the uterus, the anterior vaginal and posterior bladder walls become relaxed, the fascia vestings thinned or impaired, and a pouching inward of the bladder results.

Diagnosis of cystocele presents no special difficulty in the majority of cases. Frequently the first intimation towards the diagnosis is extended to the consulting physician or surgeon by the patient herself, through the information that she finds, on trying to introduce her finger into the vagina, that it comes in contact with some protruding round body. Such a cystocele is easily detected through examination in this manner, while the patient is on her feet. The degree of protrusion can be easily outlined; at the same time the other associated lesions or malpositions, if present, are detected. With the patient in the recumbent position, the cystocele mass disappears to a great extent, and, if the bladder is empty, may be barely apparent. Verification of the same can then be made through the use of a small sound.

Residual urine will be found present in the majority of all the more advanced cases, notwithstanding a recent emptying of the bladder. Pain and straining may accompany each act of micturition; as the condition becomes more marked decomposition of the residual urine occurs and inflammation of the bladder follows as a result of this irritating influence.

The smaller or beginning cystoceles are the type which present more meager opportunity to diagnose and consequently, less opportunity to cure. The patient's inattention to her urinary irregularity, false modesty withholding her from exposing herself to the doctor for examination, inability of the doctor to get a true history of the case or carelessly overlooking the true condition during a hurried examination of the woman's vaginal canal, all tend to promote the development of a beginning cystocele.

It is questionable in my mind if this condition is not frequently overlooked by the profession. In considering the great number of suffering females who require the constant close proximity of the most convenient urinal, are we not justified in speculating on a possible bladder prolapsus being at least a contributing cause?

In considering the relief or cure of cystocele, it is needless to say that all contributing causes to the same be properly dealt with first. Operations for the relief of cystocele have varied in idea and technique, much in the manner of the perineal work, fluctuating in keeping with the different anatomical opinions.

Unquestionably the principle of freeing the bladder, as an adjunct to the previous practice of simple denudation of the vaginal wall, added an important step toward better results.

Hadra, according to Noble, introduced this principle in 1887, with the addition of suturing the anterior vaginal wall to the anterior face of the cervix, such attachment preventing the descent of the bladder. These

principles, I believe, have been to a great extent, the basis upon which the majority of recent deviations have been formulated. It occurs to me that the cardinal objects to be obtained vary to a greater or less extent with the degree of the cystocele, the amount of weakened vaginal wall requiring removal, the degree of uterine prolapsus and position of the uterus, each individual case presenting different aspects requiring deviations in the operation in keeping with the same, the chief points embracing all are raising the bladder to its normal position; correct amount of vaginal wall extirpation; proper attachment of the anterior vaginal wall to the anterior surface of the cervix sufficient to assist the proper maintenance of the uterus in its normal position by pushing the cervix backward and upward, and at the same time supporting the bladder above; and, finally, uniting the vaginal wall in perfect, firm apposition with two or three layers of sutures. The first buried structure apposing the deep structure, the superficial continuous suture reinforcing all, with three or four deeply placed mattress sutures of chromicised gut.

In cases presenting a large cystocele and an advanced degree of uterine displacement, sufficient to make it advisable to correct the uterus through abdominal incision in the form of suspension or shortening of the round ligaments through fascia fixation, it seems reasonable that we could expect additional benefits from the various techniques which deal chiefly with shortening of the bladder's suspension from above; in such cases the operation of drawing the bladder up and attaching it to the anterior abdominal walls, under moderate tension after the methods introduced by Smith of England, about a year ago, presents points of value more as an addition to vaginal operation by holding the bladder up; however, in milder cases of cystocele, where there is no other reason for opening the peritoneum, the value to be derived is not sufficient to subject the patient to the additional danger.

My operation of choice is confined to the vagina, varying only in reference to the extent of excision of the vaginal walls, and in keeping with the associated work which may be demanded for the displacement of the womb; quite frequently after uterine replacement through any standard operation little, if any, reinforcement for the relief of the cystocele will be found necessary. The anterior vagina is put on tension and opened anterio-posteriorly, the incision carried down onto the cervix, or off to either side. The bladder is then freed to a greater or less extent from the vagina and uterus after the method of various operators who have introduced this technique. The enucleation of the vaginal wall, of course, varies with the degree of the case. The vaginal wall is now attached to the anterior cervix after the method of Noble's operation. Two or three chromicized gut sutures are passed through the edge of the incision, a half inch to an inch from its cervical terminus; these sutures dip down in their passage and take a firm dip into the upper cervical tissue, being tied later. A closely applied, continuous suture of plain catgut is next started at the anterior point of incision; this em-

braces the fibrous coat in deep firm bites, but not involving the bladder wall at any point. On reaching the point of vaginal cervical union the suture is tied. The sutures uniting the vagina to the cervix are now tied, the angle below closed and the operation completed with continuous suture of plain gut uniting the mucous and muscular layers; the line of incision may be reinforced by two or three deeply placed chromicized gut ligatures; these prevent possible distension of the tissue from a dilated bladder following the operation, which condition, however, should always be guarded against through frequent catheterization, or retained catheter with patient kept on her side for the first few days.

DISCUSSION.

Dr. Louis Rassieur, St. Louis: About six years ago a patient, about 35 years of age, while intoxicated, fell down stairs. While I was dressing his wounds, he complained of a desire to urinate, but could not do so. I passed a catheter and obtained some urine, but mostly blood. He gave a history of having had a full bladder, and was going down for the purpose of urinating. The diagnosis of rupture of the bladder was easily made. Operation was recommended which the patient refused, and he was treated by the conservative plan, being catheterized at regular intervals. He died of peritonitis three days afterward. The peritoneal cavity showed blood and urine and was inflamed.

Dr. Gordon A. Beedle, of Kansas City: In reference to the degree of support afforded by the round ligament, I agree with the doctor that less support is furnished by this ligament than by the other muscular ligaments; however, the support of the uterus, from its suspension standpoint, is not a question of any individual tissue alone, but rather the united results of the tonicity of all the tissue taken as a whole. The muscular ligaments, peritoneal folds, vascular and perivascular tissue, all supply their share in varying degrees.

PNEUMOPLEURITIS FOLLOWED BY PULMONARY ABSCESS*

BY T. A. BLACKMORE, M. D., WINDSOR, MO.

On March 23rd I was called to see this little patient, who is 11 years old and gives a good personal and family history. I found that up to 12 hours prior to my first visit he had been feeling perfectly well with no history of undue exposure. The first symptom of indisposition was a feeling of malaise, followed in a few hours by a chill of moderate severity. Inspection showed his respirations to be hurried, his face was flushed, eyes bright, and countenance depicting a somewhat anxious expression. His temperature was 103 F. and pulse 110. Palpation discovered a hot, fevered, skin and increased vocal fremitus, more marked over the right side. Percussion revealed impaired resonance over the lower lobe of the right lung, where fremitus was most increased; and auscultation in this area showed crepitant rales and slight increase of vocal resonance. There was pain below and external to the right nipple, and cough that was becoming more and more troublesome. Diagnosis, croupous pneumonia.

On my second visit, which was on the following morning, I found the respirations increased from 30 to 35 per minute, pulse 120, temperature 104 F. and sputum showing a rusty hue. Bronchial breathing was now quite marked and percussion elicited distinct dulness. The cough at this time was becoming distressing and the pain of the right side was considerably augmented. Auscultation over the most painful area now revealed a pleuritic friction sound. The third day of the disease gave very much the same picture as on the previous one, except the cough and pain had grown more severe, notwithstanding that 5 gr. of Dover's powders and 1-16 gr. of heroin hydrochlorid had been repeatedly given. At this juncture I strapped the lower half of the right chest, as the patient was vainly endeavoring by manual effort to restrict the respiratory excursions of that side. This, in conjunction with the remedies before employed, gave fair relief, though on several occasions hypodermic injections of morphia had to be given to secure rest and sleep.

No improvement was manifest till on the ninth day of the disease, when the fever began to fall by lysis, and the eleventh day found it normal. The rusty sputum, which had been copious, began to disappear and the pulmonary engorgement showed evidence of speedy resolution.

Thinking now that everything augured well for my little patient, I enjoined quiet and did not see him again for four days. At this visit it was very apparent that convalescence had been interrupted. A slight fever was present, and he was raising, with painful and persistent effort,

*Read before the Henry County Medical Society, June 24, 1908.

a slight amount of muco-purulent sputum. Examination of the lung showed that normal resolution was not progressing, there being more or less dulness on percussion and muffling of the breath sounds.

Fearing there might be some invasion of the lung by the tubercle bacilli, I promptly examined the sputum but found them absent. As the case progressed from day to day the patient presented all the evidence of accumulation of pus in some portion of the body. The temperature chart now began to show the long sweeps of septic absorption; there were sweats, chills and hectic flushings. A blood count showed a leucocytosis of over 30,000.

My patient was now losing flesh and strength rapidly, notwithstanding vigorous tonic and supportive measures were being employed. Physical signs showed increase of dulness on either side of the right axillary line, extending from the fourth to the eighth ribs. This soon gave place to flatness, with loss of all breath sounds. A change in the position of the patient effected no change of outline in the area of dulness, and a circumscribed empyema was now strongly suspected. On April 21 I aspirated for pus, but repeated punctures failed to discover its presence. The operation of opening and draining the pleural sac, which had been contemplated, was now deferred. The evidence in favor of pulmonary abscess was now very much strengthened and a probable diagnosis of the same was made.

On April 23rd, the second day after my failure to demonstrate the presence of pus by aspiration, a copious, frankly purulent, expectoration, suddenly began, a yellowish, creamy color, containing macroscopical shreds of lung tissue. The free expectoration continued, at intervals of 4 to 8 hours, with little diminution, for six days. During this time there was little abatement of the fever and sweats, the pulse continuing feeble and rapid and vomiting was frequent. The general improvement, so often seen immediately following the rupture into a bronchus of a pulmonary abscess, was wanting.

However, the seventh day following rupture showed some lessening of the purulent sputum, and pulse and temperature soon took on a favorable turn. From this period, recovery went on uninterruptedly and in two months from date of primary pneumonic attack the patient was able to be up and about the room. His weight was very much reduced, but he has improved rapidly in the past month, having gained about 20 pounds.

In this case I think it is reasonable to assume that the abscess cavity was situated very near the costal margin of the lung, as evidenced by the flatness and pain, and the interesting play of physical signs after rupture, alternating from dulness and loss of breath sounds when filled, replaced immediately after emptying, with tympany, Wintrick's sign and amphoric breathing.

The patient early learned that in certain positions he was freer from cough and expectoration than in others, and spent most of the time

lying upon the affected side with head and shoulders elevated. The taking of food seemed to favor the emptying of the abscess cavity, as ingestion was usually followed by cough, expectoration and often emesis.

Pleurisy is a very common complication of pneumonia. Writers differ greatly, however, as to its frequency, some claiming it occurs in as high as 15.8 per cent., while others place it as low as 1.3 per cent. This wide difference of opinion as to its frequency of occurrence is accounted for by the fact that some observers wholly ignore the mild pleuritic involvement, while others are content to classify the same as distinct complications. In all pneumonic processes extending to the surface of the lung, there must be some irritation of the pleura.

The nervous stability of the patient has no doubt some bearing upon the character of the suffering caused by pleurisy. Preble, whose brilliant little monograph sheds so much light upon pneumonia and its complications, cautions us to view with circumspection those cases in which the pain is beyond the ordinary, because of the frequency with which empyema results in these cases.

The mortality of pneumonia with pleurisy is greater than in the uncomplicated variety, the estimates of the various observers placing it at from 20 to 40 per cent.

Fortunately pulmonary abscess is not a common sequela of pneumonia. In 424 autopsies by Kerr there were 8 abscesses in the lungs, that is, in 1.9 per cent. of the cases going to autopsy. Sello, in 750 cases, found 11, which is 1.5 per cent.

Only general statements can be made as to the causes of this rather rare ending of pneumonic processes. Preble tells us it occurs chiefly in the debilitated and in alcoholics. Suppier claims that 80 per cent. of abscesses of the lungs, tuberculosis excluded, are in the lower lobes, and that of 49 cases upon which he operated, 23 were subsequent to croupous pneumonia.

The diagnosis of pulmonary abscess prior to rupture, is often difficult or impossible; for there may be present no other signs than cough, fever, and probably slight expectoration, with impairment of resonance on deep percussion. When the abscess is large and approaches the surface of the lung, the symptoms and physical signs are almost identical with those of empyema. The fluoroscope offers perhaps, the greatest aid in diagnosis.

The abscess may terminate, as did this one, by rupture into a bronchus and expulsion of its contents through the mouth; or death may ensue, as Hare has shown, not only from septic absorption, but from gradual exhaustion due to prolonged suppuration. The ulceration of the walls of a blood vessel with consequent severe hemoptysis may also occur. The pleura and diaphragm may likewise be perforated, if the abscess is in close proximity to these structures. Hare cautions us, however, to always regard the prognosis as grave.

In those cases terminating favorably there is formed around the zone of necrotic tissue, a wall of inflammatory exudate which later undergoes progressive fibrous contraction until the cavity disappears or is greatly reduced in size.

The treatment of abscess of the lungs divides itself into two parts: the support of the patient's strength by good foods, a liberal amount of stimulants and abundance of fresh air; and the opening of the cavity through the chest wall and lung by means of the knife, bone forceps and thermocautery.

The supportive drugs of greatest value are possibly iron, arsenic, malt, port wine and whiskey. An easily digested, semi-liquid diet, with digestants to aid speedy absorption, should be looked to. Heroin, codeine, morphine or other preparations of opium, should be employed to control cough and pain. Inhalants for relief of the associated bronchitis may also be given with benefit.

Some Recent Contributions to the Physiology of the Rectum. —Dr. Samuel T. Earle, Jr., of Baltimore, Md., stated that the properties of the external sphincter resemble those of plain muscle; that the anus closes by permanent tonus of the two sphincters independent of the will, but is supplemented by it for voluntary control, that the tonus practically disappears after section of the nervi erigentes, proving thereby that the closure depends upon the constant expenditure of nervous energy, and not upon the elasticity of the muscle and the arrangement of its fibres.

That there are constrictor and dilator fibres to the internal sphincter which can be stimulated reflexly through the spinal cord, proving a reflex centre in the lower portion of the cord; that through this centre, either reflexly or voluntarily, the internal sphincter can be dilated or constricted and the external sphincter can be inhibited. (Transactions American Proctologic Society.)

HENRY'S RUBBER DRAINAGE SPOOL FOR EMPYEMA OF THE CHEST.

BY OSCAR H. BENKER, M. D., OF ST. LOUIS, MO.

For the past three years I have carefully observed the use of this spool, in twenty cases of empyema of the chest, by its originator, Robert Y. Henry M.D., and with his permission I give the following description of the spool, its method of employment, and advantages.

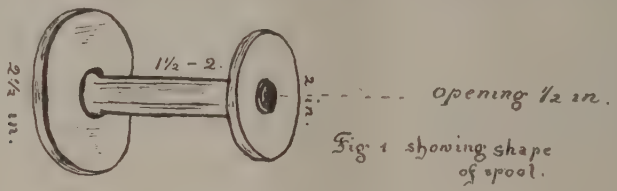

Fig. 1 showing shape of spool.

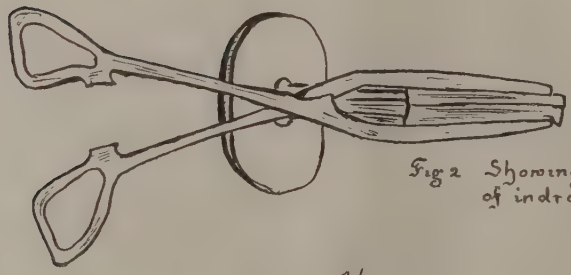

Fig 2 Showing method of introduction

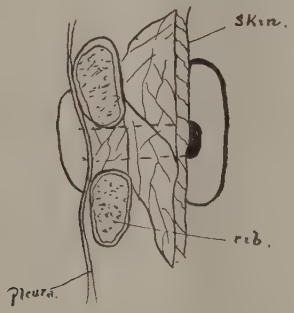

Fig. 3. Showing Spool in situ.

The spool consists of a soft rubber tube, from one and one-half to two inches in length, depending on the thickness of the chest wall, with a one-half of an inch aperture. It is made with soft rubber flanges, one flange two and one-half, and the other two inches in diameter (see fig. 1). However, the spools can be made in any size to suit each individual case.

The dimensions mentioned above are the same as have been used in the cases operated on by Dr. Henry. The smaller flange is intended for insertion into the pleural cavity; the larger remains on the exterior of the chest wall, the two binding the tube in place.

The method of using these spools is as follows: after the usual thoracotomy has been performed, all pus and blood is carefully removed and the field made as clean as possible. A sterilized spool is grasped with the dressing forceps and the smaller flange of the spool is compressed and inserted into the pleural cavity; the forceps are then removed, when the flange will expand and resume its normal shape (see figs. 1, 2 and 3).

The usual gauze dressing is now applied and changed as often as is necessary.

The advantages of this spool, as observed in our cases, are:

First: it keeps the wound clean, as all discharges are carried directly into the gauze, and they are kept from contact with the edge of the wound thus keeping it in a healthy condition, which is not the case where the ordinary drainage tube is used.

Second: with this device the tissues cannot grow into the opening of tube, thus clogging it up and preventing proper drainage.

Third: it does away with the use of safety pins, as there is absolutely no danger of the spool slipping into the pleural cavity; and it will stay in its proper place.

Fourth: the smooth inner flange of the spool adapts itself closely to the inner chest wall, and being elastic, does not injure the lung tissue but allows it to contract and expand naturally.

Fifth: the spool is easily removed, as all you have to do is to apply gentle traction to the outer flange; the inner flange will then double on itself and the entire apparatus can be withdrawn with ease.

Sixth: the device is simple, easily applied, easily removed, and always stays in place.

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ADDRESS ALL COMMUNICATIONS TO METROPOLITAN BUILDING, ST. LOUIS, MO.

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E. J. GOODWIN, M. D., Editor.

PUBLICATION COMMITTEE:

Walter B. Dorsett, Chairman. M. B. Clopton, M. C. Shelton.

EDITORIAL

THE PREVENTION OF BLINDNESS.

Let us take heart of grace! The leaven of belief in the altruistic conceptions of twentieth century medicine has been stirring the thought of leaders among lay writers ever since the American Medical Association and the various state medical organizations began the crusade of greater publicity on medical subjects, and particularly on preventive medicine and sanitation; and slowly the light of knowledge in these matters has dissipated the ignorance and prejudice which formerly enshrouded every public demand emanating from the medical profession. Examples which prophesy the ultimate realization of those ideals which the practice of medicine in its highest sense stands for to-day, are rapidly multiplying.

The latest evidence of this awakening that has come to our notice is an editorial in the *Century* for September, on the "Prevention of Blindness." The writer, after acknowledging that the prevention of blindness is a matter that "the physicians of the country have been alive to these many years," states that the New York Association for the Blind has just taken steps to minimize by preventive measures the number of persons so afflicted. "This movement," continues the writer, "resulted from the fact that a member of the new association, who has been a leader in far-reaching measures of philanthropy, recently became impressed by the startling fact * * * that from thirty to forty per cent. of those who are blind need never have become so had proper measures been taken at the right time to prevent this affliction."

Missouri has for years (to be specific, since 1895,) had upon her statute books an Act requiring nurses, midwives, and others in charge of new born babes, to report to a legally qualified physician all cases of suspected infection of the eyes occurring in children within three weeks after birth. This Act has remained practically a dead letter, although spasmodic efforts have been made by local medical societies to enforce its provisions; moreover there are many physicians and midwives and nurses now practicing in the state who have never heard of the existence of such a statute.

We venture to suggest that here lies an avenue, paved with the promise of great good to be done, which the St. Louis Medical Society might enter and gain for itself; by so doing, a modicum of that recognition on the part of the people, which is its due as an integral part of the body politic, will be forthcoming if it perform the high functions that appertain to it. The very commendable record of the State Board of Health in other instances, under the present administration, is an earnest that the full coöperation of the health officials will be unhesitatingly accorded such a movement.

Referring to another paragraph in the same editorial in the *Century*, we quote as follows:

> And is it too strained an optimism for us to look forward to a time when the danger of this phase of blindness, as of other preventable diseases, will, by purer and more sanitary living, be largely removed from the ills to which humanity is heir?

To this query we would make answer, that such a vision not only does not strain the optimism of those who are conversant with the labors of the medical profession in this direction, but that already the horizon of higher medicine shows signs of the dawn of freedom from preventable diseases.

COUNTER-PRESCRIBING.

The health department of St. Louis is still active in its campaign against that class of persons who attempt to treat disease without the authority of a license to practice medicine. Acting upon the decisions of the Supreme Court of Missouri that "medicine in its ordinary sense, as applied to human ailments, means something which is administered either internally or externally in the treatment of disease, or the relief of sickness," the health department believes that it can proceed against any unauthorized person whose acts in treating the sick constitute a violation of this interpretation of the law. The decisions give a very

broad and wide meaning to the words "medicine and surgery" and include the "professor" who administers electricity, the "medical clairvoyant," and many others of that ilk, as well as the druggist who indulges in the pernicious practice of "counter prescribing." In the opinion of the Assistant Health Commissioner, Dr. Winn, counter prescribing is a violation of the Medical Practice Act, and therefore he has determined to use all the powers of the health department in his endeavor to stop the practice.

The drug store is the Mecca where flock innumerable persons seeking something to relieve them of divers maladies, from simple acute affections that would soon disappear without treatment, to grave and chronic conditions that menace the life of the individual. Rarely indeed does the counter prescribing druggist fail to respond with a bottle of ready-made stuff, plastered with labels and wrapped with circulars describing in detail a long list of ailments that will disappear after one to six bottles have been taken. The reprehensible practice of the patent medicine maker, the nostrum vender, and even some of the respectable manufacturing pharmacists, of labeling and wrapping their products with detailed information concerning the diseases in the treatment of which the article is indicated, puts the druggist in possession of knowledge that, if he be so inclined, he will use to his own advantage, indifferent alike to the welfare of the person who consults him, the manufacturer of the medicine, or the interests of the medical practitioner who patronizes his store; and, furthermore, the manufacturer thus encourages that other baneful practice of the irresponsible pharmacist—substitution.

It may be accepted as an axiom that the druggist who makes a business of prescribing indiscriminately for the ailments of his customers, will substitute; and *vice versa*. Hence the health of the community, the business interests of the manufacturing pharmacist, and the dignity of the medical profession are all imperiled through the sciolism of unprincipled druggists, whose pernicious pretensions in this respect are prompted largely by the information contained on the labels and wrappings of articles put up, many of them, solely for the purpose of filling physicians' prescriptions.

Granting the verity of these observations, we can not escape the conclusion that manufacturers of the classes indicated are not guiltless parties to the causes that have operated to postpone the period when the practice of medicine shall comport with the high ideals that have been promulgated as its standard, and toward the accomplishment of which the American Medical Association has done and is doing a service that, after four years of labor, is just beginning to be appreciated by the medical world.

Any proper means directed toward breaking up the condemnatory habit of counter prescribing will be welcomed by the medical profession, and by the responsible and conscientious pharmacists of our city who deplore the existence of such conditions in their profession. We shall, therefore, watch the progress of this movement with deep interest. If convictions can be obtained in St. Louis we suggest that the boards of health in other cities in the state proceed in the same manner against offending druggists in their communities. That the practice is all too common none will deny, but hitherto the authorities have felt impotent to cope with the problem owing to the difficulties of securing evidence and obtaining convictions.

BURIAL OF PERSONS DYING FROM SMALLPOX AND OTHER CONTAGIOUS DISEASES.

The municipal assembly of St. Louis has recently passed an ordinance affecting the time and place of burial of bodies of persons dying from smallpox and other contagious diseases.

In the past bodies of patients dying at Quarantine could only be removed after the lapse of ten years, at which time the bodies would be in a candition rendering their removal wellnigh impossible; under the present law the bodies may be removed at once and buried in the cemeteries of the city, provided the bodies are properly prepared and enclosed in a hermetically sealed metallic caskets.

This bill was drafted by the National Smallpox Suppression Committee of St. Louis to do away with one of the antiquated, inhumane and most objectionable provisions of our quarantine law, and to overcome the most serious objection raised by the people to being sent to quarantine. The fact that so many cases of smallpox have not been reported to the authorities, due to this provision in most instances, is, to a considerable extent, responsible for the large number of cases which have occurred here during the past decade.

Now that we have a more modern and better equipped hospital at the station and that the bodies of those who die there may be removed immediately, no one afflicted with a quarantinable disease should object to being sent to quarantine.

Another bill provides for the disinterment of bodies of persons who have died of infectious or contagious disease, after such bodies have remained in their graves for one year or more. Such bodies may be removed from their graves and buried elsewhere, under such rules and regulations as the Health Commissioner and the Board of Health may

formulate. The bill further provides that bodies of persons who die of infectious or contagious disease outside of the city, may be shipped into the city and buried in the cemetries, provided they are prepared and encased to comply with the rules and regulations laid down by the Health Commissioner and Board of Health.

EDITORIAL NOTES

Tuesday, the 4th, was a very cold day in August—for Tubbs.

Dr. W. S. Allee, president of the State Medical Association 1907-1908, has been nominated for state senator from the 27th district.

The following new and non-official remedies have been approved by the Council on Pharmacy and Chemistry:

Beta-Eucaine Lactate (Schering & Glatz).
Capsules Glycerophosphates Comp. (Mulford Co.).
Iodalbin (Parke, Davis & Co.).
Iodalbin Capsules (Parke, Davis & Co.).

The office of the Texas State Journal of Medicine suffered a slight monetary loss and a great deal of inconvenience recently when the building took fire and the Journal office was drenched with water. The library, which is located in the Journal office, suffered considerably from the water and falling debris. A large part of this library had previously been through the Galveston flood.

Jackson county is making a thorough canvass of its district, through the committee on district organization, with the view of bringing into the Society all physicians eligible to membership. An effort is being made to have these gentlemen make application in time to be voted in at the first meeting in October. Those who join at this time and pay their dues will be received into full membership until January, 1910.

The month of August seems to have been accepted generally among the county societies as the time for suspending meetings, and this issue therefore contains only a few reports of county society meetings. This gives us an opportunity to publish the constitution and by-laws of the Missouri Society of Medical Secretaries (the name adopted by the Association of county secretaries), which will be found on another page of this issue.

The municipal assembly of St. Louis has passed an ordinance providing for the immediate removal and burial in the city cemeteries of the bodies of persons dying from smallpox in quarantine, and permitting the disinterment, after one year, of bodies of persons who have died from contagious diseases. Formerly bodies could not be removed from their graves at Quarantine for ten years. The bill was drafted by the National Smallpox Suppression Committee and was introduced by Dr. H. W. Bartscher.

The health department of St. Louis, early in the year, took up the systematic investigation of the sanitary conditions of grocery stores, meat shops, restaurants, bakeries and confectioneries. A special inspection of these places is made several times a year and a record of the report of the inspector is kept on file. This year about 200 stores in these classes have been inspected. Of this number about 50 per cent. was found in good condition, 40 per cent. required special attention as to defects in plumbing, ventilation, etc., and 10 per cent. was ordered to make more extensive alterations and give greater attention to the cleanliness of utensils, furniture, apparatus, etc.

The Wisconsin State Medical Association closed a successful meeting on June 26th. Among the important measures adopted was a plan for defending members against civil malpractice suits. The committee on public policy and legislation asked for financial assistance in prosecuting quacks and illegal practitioners in the state. The House of Delegates voted that a voluntary assessment of $2.00 per capita be ordered and the sum thus realized be placed at the disposal of the committee. A referendum vote was ordered on the proposition to increase the annual dues from $3.00, the present amount, to $4.00, this to include the medical defense privilege.

Tuberculosis in St. Louis for the week ending July 22nd showed a decrease of new cases and fatalities as compared with the corresponding period in 1907. In the latter year 60 new cases were reported and 29 deaths, while this year there were 48 new cases and 18 deaths. This falling off is attributed to the extra precautions taken by the Health Department, whose work has become more effective since the passage of the ordinance requiring physicians to report cases of tuberculosis and also through the coöperation of the antituberculosis society.

The State Board of Health has been ordered by the Circuit Court to examine the graduates of the 1908 class of the Barnes University for license to practice medicine in Missouri. This action is the result of the suit brought by the class to compel the board to examine them, a privilege that had been refused on the ground that the faculty had failed to equip the institution according to the standard adopted by the board.

The order is based upon the decision of the court that the board had not properly examined the equipment. The order applies only to the 1908 class, the court expressing the opinion that if, after further examination, Barnes University does not meet the demands of the schedule of minimum requirements, "the right of the board to exclude future graduating classes will not be subject to successful attack in the courts." The board has filed an appeal which acts as a supersedeas.

The medical profession of California is rejoicing over a recent decision of the Supreme Court, which seems to establish the constitutionality of the new act governing the practice of medicine in that State. We congratulate the members of the California State Medical Association in having a good law governing the practice of medicine, and one so constructed that it can be successfully defended against attacks by that element, all too numerous in every community, which abhors legislative strictures upon pseudo-medical practices. Commenting upon the decision, the editor of the *California State Journal of Medicine* says, "this will be a sad blow to that small but compact circle of 'sore heads' and their diploma mill friends; but that also is a cause for rejoicing."

Indicative of the growing influence of the medical profession in public health matters rises conspicuous the adoption of a public health plank in the platforms of the two great political parties. The Republican platform contains the following paragraph on this subject:

We commend the efforts designed to secure greater efficiency in national public health agencies and favor such legislation as will effect this purpose.

The plank in the Democratic platform is more explicit; it reads as follows:

We advocate the organization of all existing national public agencies into a national bureau of public health, with such powers over sanitary conditions connected with factories, mines, tenements, child labor and other such subjects as are properly within the jurisdiction of the federal government and do not interfere with the power of the states controlling public health agencies.

As both political parties have now pledged themselves to support measures under federal control, for the proper safe-guarding of the national public health, we may look forward hopefully to the passage of a bill, at an early session of Congress, establishing a national bureau or department of public health.

At the annual meeting of the New Jersey Medical Society, June 19, 1908, the report of the committee on medical defense was laid over for another year. The committee's report was favorable to the adoption of the medical defense plan, but the majority of the members of the House of Delegates evidently were influenced to vote against its

adoption through the adverse opinions of many who discussed the subject, notwithstanding strong arguments by the secretary and others favorable to the report. We think the New Jersey Association will make no mistake in adopting this plan when the matter comes up for action next year. Their treasury is well filled and funds could be appropriated without weakening any department, although the objections did not hinge upon this point. We consider the medical defense feature of state organizations one of the strongest bars to malicious and injurious acts by unprincipled persons, in or out of the profession. All associations that have adopted the plan report an immediate and decided decrease in the number of malpractice suits against members. The Missouri State Association extended this protection to its members last May, and did so without imposing any additional tax upon the membership, therein advancing a step further than most of the other states that have adopted the plan; for, in nearly all other instances, the annual dues have been increased, or a special tax levied, to meet the added expense.

NEWS NOTES

Dr. H. W. Soper, of St. Louis, was married to Miss Mary R. Holcomb, of Rochester, N. Y., on August 12th.

Dr. Archer O'Reilly and Dr. J. R. Clemens, of St .Louis, journeyed to Boston by the automobile route during the month of August. They were on the road ten days.

The County Secretaries of the Michigan State Medical Association will hold a meeting in September to discuss the advisability of organizing a County Secretaries Association.

The Southern Medical Association will hold its second annual meeting at Atlanta, Ga., on November 10th. The proceedings will be divided into three sections—a section on medicine, a section on surgery and a section on ophthalmology. Dr. Oscar Dowling, of Shreveport, La., is secretary.

The use of denatured alcohol in the manufacture of liquid medicinal preparations, either for external or internal use, is prohibited by law. Physicians will do well to remember this and not prescribe denatured alcohol in any form. There is a penalty attached to the writing of such prescriptions and the druggist who fills them is also liable to prosecution.

All physicians who contemplate attending the meeting of the International Congress on Tuberculosis at Washington, D. C., September 21st to October 12th, are invited to correspond with Dr. Chas. Wood Fassett, St. Joseph, Mo., who has charge of the Missouri excursion party, and full particulars relative to accommodations enroute and in Washington will be furnished them.

The next annual meeting of the Medical Association of the Southwest will be held in Kansas City, October 19-21. The members in Kansas City are preparing an elaborate program for the entertainment of the visiting physicians and their wives, so that all who contemplate attending this meeting are assured in advance that their visit will be made pleasant and profitable. In addition to a banquet at the Coates House, tendered by the physicians of Kansas City, that prince of hosts, Dr. J. D. Griffith, will guide the ladies on an automobile trip over the beautiful boulevards, through the parks and along the famous Cliff Drive. The scientific program includes a number of clinics at the various hospitals and medical colleges. The Coates House has been selected as headquarters.

Washington University, during commencement week (May, 1908), held a series of clinics and lectures designed especially for practitioners. In designing the instruction offered in this course, the needs of the practitioner were kept in view, and so far as possible the work was made of a purely practical character. In all the courses the work was of a nature to appeal to the surgeon and general practitioner who wish to complete their knowledge of the newer subjects that have come out during the year. All physicians, graduates of Washington University and of other medical schools, were invited to take this work. About fifty non-resident physicians availed themselves of the opportunity to extend their knowledge in this manner. Clinics were held in the various hospitals and dispensaries connected with the Washington University. No fees were charged.

Not the least attractive feature of this gathering of graduates were the social features. Dr. Tuholske entertained the visitors at his residence at an informal reception, and the Alumni dinner was held during that week. It is intended that this work shall be made a permanent feature of commencement week of the Medical Department of Washington University.

OBITUARY

L. E. WHITNEY, M. D.

Dr. L. E. Whitney, of Carthage, Mo., died as the result of an accident while driving on a country road in the vicinity of his home. It was at first supposed that he had been assaulted and murdered, but this belief was not substantiated and a verdict of accident was rendered.

Dr. Whitney was born in New York in 1853. He graduated from the Homeopathic Medical College of Missouri in 1878 and began the practice of his profession in Carthage in 1879. He continued active in his work in that city until his death. He was a prominent advocate of all matters that stood for the improvement of the city's welfare and was recognized as a progressive and conscientious physician. At the time of his death he was city physician of Carthage.

WILLIAM K. CRELLIN, M. D.

Dr. William K. Crellin died August 2nd, 1908, at the residence of his daughter, Mrs. J. W. Botts, in Chillicothe, Mo. Dr. Crellin was born in Whitehaven, England, September 19th, 1817, being in his 91st year at the time of his death. He came to this country with his parents when a child and spent his childhood days in Philadelphia. He graduated in medicine in Cleveland, Ohio, and spent 55 years in the active practice of his profession, the last 28 years in Chillicothe, Mo.

Dr. Crellin possessed considerable literary ability and spent much of his time composing verse. For ten years he had been totally blind, but retained his mental faculties to the last. He always stood in the advance columns of the medical profession, and at the time of his death was an honorary member of the Livingston County Medical Society.

G. W. ALEXANDER, M. D.

Dr. G. W. Alexander, of Chula, Mo., died of apoplexy, June 20th, 1908. Dr. Alexander was born in Kentucky in 1856. He graduated from the Louisville Medical College in 1881, and moved at once to Missouri, where he engaged in general practice. He was a member of the County and State Medical Societies and the American Medical Association at time of his death.

CORRESPONDENCE

To the Editor:

In regard to the serum treatment of cancer, which the newspapers announced as a cure, I would respectfully refer you to a copy of a letter which I sent to the editor of the New York *American,* which explains the circumstances in detail; and also to a statement in the *Post-Dispatch* of July 27th, which gives the facts in the matter.

Needless to say, this notoriety has been unpleasant and demonstrates the inefficiency of the news in our daily papers. It would be a favor to me for you to mention the facts in the proper light, as you may see fit, not only to place my position clearly before the profession, but also to demonstrate to them how easy it is to be placed before the public in an improper and disgusting position. I have received letters from all over the United States east of the Mississippi river and also from Texas, and probably will receive more from the western country when the original article is reproduced in the western papers. Many patients express a desire to come here immediately for treatment; all of them seem to come from an intelligent class of people who write letters which are extremely appealing, and show that the public is easily swayed by anything which is read in the newspapers. Reporters for all of the daily papers visit the hospital daily, and they often obtain a smattering of facts about cases, and then write articles which are misleading and form attractive sensational news.

Trusting that this letter and the inclosures will give you a complete idea of the circumstances, I am,

Yours very truly,

(Signed) C. H. Shutt.

(Copy of letter to the New York *American.*)

Editor, New York *American:*

I have received a number of clippings taken from your paper by people who are sufferers from cancer or who have relatives suffering from this dread disease. The original article, which was published in a morning paper in this city, was written by a reporter who was careless with the facts in the matter, and has gained for me much obnoxious notoriety, and caused false hopes to arise in many sufferers from cancer, for which, I am sorry to say, the scientific and honest medical profession does not claim to have a cure at the present day. Many physicians are earnestly spending their entire time searching for a remedial measure for this disease.

Sufferers from cancer, as well as from any other incurable disease, are easily deluded by any phantom which gives the slightest hopes of improvement. I take it that your paper has the high motive of giving the best information obtainable to its readers, and I would respectfully refer you to the enclosed article from the St. Louis *Post-Dispatch* of July 27, 1908, which is authentic and gives the facts in the matter. Many sufferers from cancer have written me, and in justice to them I could not allow their letters to go unanswered, but many, no doubt, have read articles in the papers and are wondering whether or not the serum is of value. The enclosed article is self-explanatory and authentic. I would respectfully suggest that a number of your readers would be interested in knowing the truth about cancer cures at the present day.

I am sorry to say that physicians of reputation and scientific knowledge do not profess to be able to cure any case of cancer after the disease has existed for any length of time. Many physicians are spending much of their time, some of them their entire time, in working towards some measure which will eradicate this, at the present time, incurable disease. In its early stages in certain locations in the body good surgeons are able to do a thorough operation with reasonable chances of a cure.

I hope that this letter will be of value to you in informing your patrons of the true standing of cancer and the many so-called cures which are mentioned.

Very sincerely,

(Signed) C. H. Shutt.

COUNTY SOCIETY NOTES

CAPE GIRARDEAU COUNTY MEDICAL SOCIETY.

The Cape Girardeau County Medical Society held its regular monthly meeting at Jackson, August 7th, six members being present.

Dr. J. W. Frisler was elected a member of the Society, by transfer from Kentucky.

Dr. Hays read a paper on "Treatment of Acute and Chronic Myocarditis." The paper showed a good knowledge of the subject and of the application of the drug, digitalis, so frequently misused in all forms of heart disease. The doctor thoroughly differentiated the use of drug in such cases.

The practice of druggists prescribing at any and all times, for all ailments of humanity, created considerable discussion. This practice is very common in our county.

On motion the Society adjourned to meet at Cape Girardeau, September 4th.—E. H. G. Wilson, M. D., Secretary.

GASCONADE-MARIES-OSAGE COUNTY MEDICAL SOCIETY.

The Gasconade-Maries-Osage County Medical Society met in Meta, Saturday afternoon, August 8th.

Two patients presented themselves as clinics, the first suffering with astigmatism, and the second with presbyopia, the eyes of both were tested by Dr. John D. Seba, and a prescription for proper glasses given.

Dr. J. E. Neeley, of Vancleave, read a paper on typhoid fever. The essayist went deeply into the etiology, pathology, course and complications of the disease, also its prophylaxis and treatment. This paper was ably written and the discussion by the members present occupied the entire afternoon.

The Secretary read the names of members of the Society as follows: Dr. Frederick Auf der Heide, Drake; Dr. R. E. Baker, Vienna; Dr. J. A. L. Buechler, Freeburg; Dr. J. W. Burgess, Belle; Dr. W. F. Byler, Koeltztown; Dr. John Engelbrecht, Stonyhill; Dr. J. J. Ferrell, Owensville; Dr. W. R. Ferrell, Bland; Dr. C. T. Leach, Fuersville; Dr. J. W. Nieweg, Owensville; Dr. J. E. Neeley, Vancleave; Dr. J. J. Radmacher, Meta; Dr. John D. Seba, Bland; Dr. W. E. Seba, Leedey, Oklahoma; Dr. M. W. Spurgeon, Redbird; Dr. S. J. Terrell, Meta.

Upon motion it was ordered that our next meeting be held Thursday afternoon, September 17th, 1908, in Drake, Gasconade county.—John D. Seba, M. D., Secretary and Treasurer.

RALLS COUNTY MEDICAL SOCIETY.

The Ralls County Medical Society met at Spalding Springs, July 9th. The following officers were elected for the ensuing year: President, C. H. Graves, Carter; vice-president, W. L. Birney, Oakwood; secretary-treasurer, reporter and delegate for two years, T. J. Downing, New London.

Papers were read by Drs. L. W. Dallas, C. L. Pryor, W. S. Smith, Fred Watts, C. R. Dudley, W. G. Hendrix, W. T. Waters and Col. Joe Burnett, all on tuberculosis. The discussion following the reading of the papers was general and the meeting was a pronounced success. About twenty doctors were present.—T. J. Downing, M. D., Reporter.

CONSTITUTION AND BY-LAWS FOR THE MISSOURI SOCIETY OF MEDICAL SECRETARIES.

CONSTITUTION.

Article I. Name—This Society shall be known as the Missouri Society of Medical Secretaries.

Art. II. Objects—The objects of this Society are to cultivate a closer relationship between the component County Societies; to establish improved and more uniform methods of conducting the meetings; to devise and develop the best means of creating and holding interest in the work, and for increasing membership; and by coöperating with the officers of the State Society, to promote the general welfare of the organized profession of the State.

Art. III. Membership—Members shall be limited to the Secretaries and Councilors of County, State and District Medical Societies.

Art. IV. Annual Meeting—The annual meeting shall be held each year on the first day of the annual meeting of the Missouri State Medical Association, the hour and place to be designated by the Secretary of the Society of the County in which the meeting is held, with the approval of the executive committee.

Art. V. Special Meetings—Special meetings may be called at any time by the President, upon written application signed by five members.

Art. VI. Officers—The officers of this Society shall be: A President, two vice-presidents, a secretary-treasurer, and an executive committee composed of five members, of which board the President and Secretary shall be members, *ex-officio*.

Art. VII. Amendments—Any article of this Constitution may be amended at any annual session, provided that three-fourths of the members present favor it.

BY-LAWS.

Article I. Membership—Any physician, who holds the office of Secretary or Councilor in a County, State or District Medical Society, is entitled to membership so long as he holds such office. Should he resign, be removed from office, or be succeeded in office, his membership

in this Society will cease, and his successor will become a member in his stead.

SEC. II. The Secretary of this Society must be notified promptly by County Societies when new Secretaries are installed.

ART. II. Duties of Officers—The President shall preside at all meetings, and perform such other duties as the welfare of the Society may demand. The Vice-Presidents shall assist the President, and one shall preside in his absence, or at his request. The Secretary-Treasurer shall keep a record of the meetings, conduct the correspondence, and perform such other duties as may be required, keeping in close touch with the Secretary of the State Medical Society in all matters concerning medical organization.

ART. III. Election of Officers—The officers shall be elected by ballot at the annual meeting, and shall hold their respective offices until their successors have been duly elected and installed.

ART. IV. Dues and Assessments—No dues shall be paid in this Society, but an assessment to meet expenses may be levied upon the members, not to exceed one dollar each, in any year, after such assessment has been approved by the board of directors.

ART. V. No section in these by-laws shall be considered effective, if in conflict with the Constitution and By-Laws of the State Association.

ART. VI. Amendments—These by-laws may be amended and supplemented at any meeting, by a three-fourths vote of the members present and voting.

BOOK REVIEWS

STATE BOARD QUESTIONS AND ANSWERS. By R. Max Goepp, M. D., Professor of Clinical Medicine at the Philadelphia Polyclinic. Octavo volume of 684 pages. Philadelphia and London. W. B. Saunders Company, 1908. Cloth, $4.00 net; half morocco, $5.50 net.

This is the largest volume yet published, the material of which is selected from State Board questions given by the larger and more representative states. It contains nearly 700 pages and covers not only the elementary branches of medicine, but the fields of surgery, practice, etc. On the whole the questions are practical and sensible and most any student who has had the average training ought to be able to answer 70 per cent. of any selected set of questions. Some of the questions in anatomy will be difficult to answer, as are some of those in surgery. The best questions are found in practice and physical diagnosis. The arrangement of the subject matter is without fault and the book is interesting to read not only for those expecting to take the State Board examination, but for physicians who want to keep posted on lines of State Board work.

ARTICLES APPROVED BY THE COUNCIL ON PHARMACY AND CHEMISTRY.

LYSIDIN.

Lysidin | $CH_2.N:$ / $CH_2.NH.$ $C.CH_3=C_4H_8N_2$, is a monatomic base derived from ethylene diamine.

Actions and Uses.—Lysidin is said to be a diuretic and is recommended as a uric acid solvent on the theory that, because it forms a very soluble salt with uric acid, it will facilitate the elimination of that substance. It is claimed that it is superior to piperazine. It is recommended in gout, lithiasis and the various forms of the so-called uric acid diathesis. Manufactured by Farbwerke, vorm. Meister, Lucius & Bruening, Hoechst a. M. (Victor Koechl & Co., New York).

MERCUROL.

Mercurol is an organic compound of mercury with nucleinic acid from yeast, containing 10 per cent. of metallic mercury.

Actions and Uses.—Mercurol does not coagulate albumin; it has marked bactericidal power and possesses the pharmacologic action of soluble mercury compounds. It is recommended as a local antiseptic application and as an antisyphilitic remedy. Dosage.—0.03 to 0.12 Gm. (½ to 2 grains). Manufactured by Parke, Davis & Co., Detroit, Mich.

MESOTAN.

Mesotan, $C_6H_4.OH.COO(CH_2.O.CH_3)=C_9H_{10}O_4$, is the methyl-oxymethyl ester of salicylic acid, analogous to wintergreen oil.

Actions and Uses.—The action of mesotan is similar to that of oil of wintergreen, but it is more irritating to the skin. Dosage.—Being quite irritating when applied pure to the sensitive skin, it is employed diluted with an equal volume of olive oil, and without friction. Simple application to the affected part, which need not be covered, or, if so, only slightly, suffices to give prompt relief. Manufactured by Farbenfabriken, vorm. Friedr. Bayer & Co., Elberfeld, Germany (Continental Color & Chemical Co., New York).

METHAFORM.

A name applied to chlorbutanol (which see). Manufactured by F. Stearns & Co., Detroit, Mich.

MIGRAININ.

A mixture of antipyrine 85 parts, caffeine 9 parts and citric 6 parts.

Actions and Uses.—It is antipyretic and analgesic, combining the actions of its components. Dosage.—0.4 to 1 Gm. (6 to 15 grains) in powder, cachets or tablets, the dose being repeated once or twice during the day. Manufactured by Farbwerke, vorm. Meister, Lucius & Bruening, Hoechst a. M. (Victor Koechl & Co., New York).

NEUROCAINE.

Each billet contains cocaine hydrochloride 0.05 Gm. (1-12 grain), without excipient. The billets are ⅛ inch long, 1-20 inch in diameter and very soluble. Neurocaine is used for pressure anesthesia or as a local anesthetic in dental practice. Prepared by Schieffelin & Co., New York.

NEURONIDIA.

An elixir said to contain in each 8 Cc. (2 fluidrams) 0.26 Gm. (4 grains) of veronal (diethylmalonylurea in a menstruum containing 35 per cent. of alcohol, with aromatics.

Dosage.—(8 to 16 Cc.) (2 to 4 fluidrams). Prepared by Schieffelin & Co., New York.

NUTROSE.

Nutrose is a sodium salt of milk casein, containing 65 per cent. of proteids.

Actions and Uses.—Nutrose is recommended as a non-irritant nutrient in wasting diseases, such as the cachexias in carcinoma, anemia, diabetes, etc., and in acute and chronic febrile ailments, such as pneumonia, typhoid fever and tuberculosis. Manufactured by Farbwerke, vorm. Meister, Lucius & Bruening Hoechst a. M. (Victor Koechl & Co., New York).

[TO BE CONTINUED.]

AMERICAN MEDICAL ASSOCIATION.

Next Annual Meeting at Atlantic City, N. J., 1909.

President: HERBERT L. BURRELL, Boston.
President Elect: WM. C. GORGAS, Ancon, Panama.
Secretary and Editor: GEORGE H. SIMMONS, 103 Dearbon Ave., Chicago.

MISSOURI STATE MEDICAL ASSOCIATION.

Next Annual Meeting, Jefferson City, May 18, 19, 20, 1909

President: A. R. KIEFFER, St. Louis.
Vice Presidents:
D. B. FARNSWORTH, Springfield; W. J. FRICK, Kansas City; J. B. NORMAN, California; C. H. DIXON, Holliday; M. A. SMITH, Gallatin.
Secretary: A. W. McALESTER, Jr., Kansas City.
Assistant Secretaries: WILLARD BARTLETT, St. Louis; W. R. PATTERSON, Tipton; T. McLEMORE, Nevada.
Treasurer: J. FRANKLIN WELCH, Salisbury.

Medical Section.

Chairman: E. E. GILMORE, Adrian. Secretary: W. R. PATTERSON, Tipton.

Surgical Section.

Chairman: PAUL Y. TUPPER, St. Louis. Secretary, WILLARD BARTLETT, St. Louis.

Eye, Ear, Nose and Throat Section.

Chairman: J. H. THOMPSON, Kansas City. Secretary, T. McLEMORE, Nevada.

ORATORS.

Oration on Medicine:

R. H. GOODIER, Hannibal.

Oration on Surgery:

F. J. LUTZ, St. Louis.

COMMITTEES.

Committee on Scientific Work.

E. E. Gilmore, W. R. Patterson, Paul Y. Tupper, Willard Bartlett, J. H. Thompson, T. McLemore.

Publication Committee.

W. B. Dorsett, Chairman; M. B. Clopton, M. C. Shelton.

Committee on Public Policy and Legislation.

H. E. Pearse, Chairman; R. M. Funkhouser, F. R. Newberry.

Defense Committee.

F. J. Lutz, Chairman; W. B. Dorsett, Joseph Grindon.

Committee on Medical Education.

B. M. Hypes, Chairman; C. M. Jackson, O. B. Campbell.

Committee on Tuberculosis.

E. W. Schauffler, Chairman; Geo. Homan, J. R. Lemen, W. E. McKinley, J. R. Boyd.

Missouri Society of Medical Secretaries.

President, Foster W. Burke, Laclede; First Vice-President, M. A. Smith, Gallatin; Secretary-Treasurer, Chas. Wood Fassett, St. Joseph.

COUNCILLOR DISTRICTS AND COUNTIES IN EACH DISTRICT.*

F. J. LUTZ, St. Louis, Chairman. E. J. GOODWIN, St. Louis, Secretary.

First District.—Councillor, C. L. Evans, Oregon. Counties: Holt, Atchison, Nodaway.

Second District.—Councillor, W. T. Elam, St. Joseph. Counties: Buchanan, Andrew.

Third District.—Councillor, G. W. Whitely, Albany. Counties: Harrison, Worth, Gentry, DeKalb.

Fourth District.—Councillor, C. R. Buren, Princeton. Counties: Grundy, Sullivan, Mercer, Putnam.

Fifth District.—Councillor, E. E. Parrish, Memphis. Counties: Clark, Scotland, Schuyler.

Sixth District.—Councillor, H. Jurgens, Edina. Counties: Adair, Knox, Lewis.

Seventh District.—Councillor, L. W. Dallas, Hunnewell. Counties: Shelby, Marion, Ralls.

Eighth District.—Councillor, W. B. Dorsett, St. Louis. Counties: Lincoln, St. Charles, St. Louis, Pike.

Ninth District.—Councillor, A. R. McComas, Sturgeon. Counties: Audrain, Boone, Howard, Callaway, Warren, **Montgomery.**

Tenth District.—Councillor C. W. Reagan Macon. Counties: Macon, Randolph, Monroe.

Eleventh District.—Councillor, J. D. Brummall, Salisbury. Counties: Chariton, Carroll, Livingston, Linn.

Twelfth District.—Councillor, E. H. Miller, Liberty. Counties: Platte, Clay, Ray, Clinton, Caldwell, Daviess.

Thirteenth District.—Councillor, F. E. Murphy, Kansas City. County, Jackson.

Fourteenth District.—Councillor, C. T. Ryland, Lexington. Counties: Lafayette, Saline, Cooper.

Fifteenth District.—Councillor, M. P. Overholser, Harrisonville. Counties: Cass, Johnson.

Sixteenth District.—Councillor, J. R. Buchanan, Nevada. Counties: Bates, Vernon, Barton.

Seventeenth District.—Councillor, R. D. Haire, Clinton. Counties: Pettis, Henry, Benton, St. Clair, **Hickory.**

Eighteenth District.—Councillor, Frank DeVilbiss, Eugene. Counties: Miller, Moniteau, Morgan, Camden.

Nineteenth District.—Councillor, G. Ettmueller, Jefferson City. Counties: Cole, Osage, Maries, Gasconade.

Twentieth District.—Councillor, F. J. Lutz, St. Louis. Counties: Franklin, St. Louis City.

Twenty-first District.—Councillor, G. M. Rutledge, Ste. Genevieve. Counties: Jefferson, Ste. Genevieve, Perry.

Twenty-second District.—Councillor, F. R. Newberry, Fredericktown. Counties: Scott, Madison, Cape Girardeau, Mississippi, **Bollinger.**

Twenty-third District.—Councillor, T. C. Allen, Bernie. Counties: Stoddard, Dunklin, Pemiscot, New Madrid.

Twenty-fourth District.—Councillor, T. W. Cotton, Van Buren. Counties: Wayne, Ripley, Butler, Carter.

Twenty-fifth District.—Councillor Frank Harrison, Farmington. Counties: Washington, Reynolds, Iron, St. Francois.

Twenty-sixth District.—Councillor, R. L. Johnson, Rolla. Counties: Crawford, Phelps, Pulaski, Laclede, Dent, **Dallas.**

Twenty-seventh District.—Councillor, H. C. Shuttee, West Plains. Counties: Howell, Shannon, **Ozark, Oregon, Texas, Wright, Douglas.**

Twenty-eighth District.—Councillor, T. A. Coffelt, Springfield. Counties: Greene, Lawrence, Barry, Stone, Christian, Webster, Polk, Taney.

Twenty-ninth District.—Councillor, A. R. Snyder, Joplin. Counties: McDonald, Newton, Jasper, Cedar, **Dade.**

***Counties in black are not organized.**

Societies in Affiliation with the State Medical Association.

County.	President.	Address of President.	Secretary.	Address of Sec'y.
Adair	J. S. Gashwiler	Novinger	E. C. Grim	Kirksville.
Andrew	John Husher	Rosendale	B. E. Miles	Fillmore.
Atchison	E. A. Lewis	Rockport	A. McMichael	Rockport.
Audrain	W. W. McFarlane	Mexico	C. A. Rothwell	Mexico.
Barry	Wm. M. West	Monett	D. L. Mitchell	Cassville.
Barton	A. B. Stone	Lamar	C. F. Brown	Lamar.
Bates	H. A. Rhodes	Foster	E. N. Chastain	Butler.
Benton	E. L. Rhodes	Lincoln	W. S. Jones	Lincoln.
Boone	W. A. Norris	Columbia	A. W. Kampschmidt	Columbia.
Buchanan	H. S. Forgrave	St. Joseph	Chas. W. Fassett	St. Joseph.
Butler	Victor Cadwell	Poplar Bluff	A. R. Rowe	Poplar Bluff.
Caldwell	C. O. Dewey	Breckenridge	Tinsley Brown	Hamilton.
Callaway	H. I. Owen	Fulton	Martin Yates	Fulton.
Camden	G. M. Moore	Linn Creek	G. T. Myers	Macks Creek.
Cape Girardeau	R. F. Wichterich	Cape Girardeau	E. H. G. Wilson	Cape Girardeau.
Carroll	W. C. Baird	Bogard	R. F. Cook	Carrollton.
Carter-Shannon	Wm. Fulton	Winona	J. A. Chilton	Van Buren.
Cass	G. M. Anderson	Pleasant Hill	R. P. Yeagle	Pleasant Hill.
Cedar	Kimball Hill	El Dorado Springs	J. W. Dawson	El Dorado Springs.
Chariton	C. H. Temple	Rockford	C. A. Jennings	Salisbury.
Christian	J. C. Young	Ozark	J. A. Roberson	Ozark.
Clark	R. G. Callihan	Luray	Frank B. Hiller	Kahoka.
Clay	C. H. Suddarth	Smithville	F. H. Matthews	Liberty.
Clinton	John Sturgis	Perrin	E. A. Colley	Plattsburg.
Cole	W. A. Clark	Jefferson City	S. V. Bedford	Jefferson City.
Cooper	R. L. Evans	Boonville	J. R. Lionberger	Boonville.
Crawford	W. A. Metcalf	Steelville	A. H. Horn	Steelville.
Daviess	W. L. Brosius	Gallatin	M. A. Smith	Gallatin.
DeKalb	E. T. Stroup	Weatherby	R. A. Evans	Amity.
Dent	A. F. McMurtrey	Salem	W. E. Rudd	Salem.
Dunklin	N. F. Kelley	Kennett	Paul Baldwin	Kennett.
Franklin	J. P. Dunigan	Sullivan	A. C. Brown	Moselle.
Gasconade-Maries-Osage	J. J. Radamacher	Meta	J. D. Seba	Bland.
Gentry	J. U. Barger	Darlington	Benj. Davis, Jr.	Albany.
Greene	T. A. Coffelt	Springfield	J. L. Ormsbee	Springfield
Grundy	Samuel Sheldon	Trenton	E. A. Duffy	Trenton.
Harrison	W. H. Wiley	Ridgeway	J. H. Morroway	Ridgeway.
Henry	J. R. Hampton	Clinton	F. M. Douglass	Clinton.
Holt	F. E. Bullock	Forest City	J. F. Chandler	Forest City.
Howard	J. Y. Hume	Armstrong	C. W. Watts	Fayette.
Howell	J. C. B. Davis	Willow Springs	A. H. Thornburgh	West Plains.
Iron	Ira A. Marshall	Ironton	G. W. Farrar	Ironton.
Jackson	C. B. Hardin	Kansas City	E. L. Stewart	Kansas City.
Jasper	J. W. Clark	Carterville	R. M. James	Joplin.
Jefferson	G. W. Tidwell	DeSoto	R. E. Donnell	DeSoto.
Johnson	W. G. Thompson	Holden	E. H. Gilbert	Warrensburg.
Knox	J. R. Northcutt	Knox City	A. R. Wilsey	Hurdland.
Laclede	W. C. Lockwood	Conway	J. A. Pinckard	Lebanon.
Lafayette	Lewis Carthrae	Corder	C. T. Ryland	Lexington.
Lawrence-Stone	D. M. Huffman	Crane	C. W. Shelton	Mt. Vernon.
Lewis	J. C. Brown	Lewistown	Paul F. Cole	Steffenville.
Lincoln	S. R. McKay	Troy	Wm. P. Smith	Troy.
Linn	J. T. Polson	Laclede	Foster W. Burke	Laclede.
Livingston	H. M. Grace	Chillicothe	J. C. Shelton	Chillicothe.
McDonald	E. F. Doty	Anderson	M. L. Sellers	Anderson.
Macon	W. H. Miller	Macon	F. B. Dailey	Keota.
Madison	S. C. Slaughter	Fredericktown	J. K. Smith	Fredericktown.
Marion	F. W. Bush	Hannibal	H. L. Banks	Hannibal.
Mercer	H. P. Chesmore	Princeton	C. R. Buren	Princeton.
Miller	J. L. Gilleland	Olean	W. L. Allee	Eldon.
Mississippi	R. K. Ogilvie	Charleston	S. P. Martin	East Prairie.
Moniteau	H. V. Thorpe	Jamestown	W. R. Patterson	Tipton.
Monroe	C. H. Dixon	Holliday	W. T. Bell	Stoutsville.
Morgan	P. G. Woods	Versailles	H. N. Lutman	Versailles.
New Madrid	Welton O'Bannon	New Madrid	C. W. Watson	New Madrid.
Newton	R. L. Wills	Neosho	Horace Bowers	Neosho.
Nodaway	L. E. Dean	Maryville	C. E. Fronk	Maryville.
Pemiscot	J. G. Luten	Caruthersville	John Johnson	Hayti.
Perry	T. M. Hudson	Perryville	F. M. Vessells	Perryville.
Pettis	C. Bohling	Sedalia	Frank R. Morley	Sedalia.
Phelps	W. S. Smith	Rolla	S. L. Baysinger	Rolla.
Pike	R. L. Pollard	Eolia	R. G. Hereford	Louisiana.
Platte	W. D. Swaney	Linkville	F. M. Shafer	Edgerton.
Polk	J. E. Loafman	Bolivar	J. F. Roberts	Bolivar.
Pulaski	W. L. Ragan	Richland	E. A. Oliver	Richland.
Putnam	C. H. Carryer	Unionville	J. A. Townsend	Unionville.
Ralls	C. H. Graves	Carter	T. J. Downing	New London.
Randolph	G. O. Cuppaidge	Moberly	T. D. Mangus	Moberly.
Ray	R. L. Hamilton	Richmond	H. S. Major	Hardin.
Reynolds	J. M. Lowrey	Centerville	T. W. Chilton	Corridon.
Ripley	S. A. Proctor	Doniphan	J. F. Redwine	Doniphan.
Saline	D. C. Gore	Marshall	A. E. Gore	Marshall.
St. Charles	J. R. Mudd	St. Charles	B. K. Stumberg	St. Charles.
St. Clair	R. J. Smith	Johnson City	Ruth Seevers	Osceola.
St. Francois	T. L. Haney	Farmington	R. Applebery	Leadwood.
Ste. Genevieve	F. E. Hinch	Ste. Genevieve	R. W. Lanning	Ste. Genevieve.
St. Louis	H. Tuholske	465 N. Taylor	C. E. Burford	955 Hamilton Av.
St. Louis Co	C. A. Dunnavant	Kirkwood	W. H. Townsend	Maplewood.
Schuyler	E. L. Mitchell	Lancaster	H. E. Gerwig	Downing.
Scotland	W. E. H. Bondurant	Memphis	W. E. Alexander	Memphis.
Scott	W. H. Wescoat	Oran	W. S. Hutton	Fornfelt.
Shelby	J. D. Smith	Shelbina	A. M. Wood	Lentner.
Stoddard	Edward Moore	Bloomfield	John Ashley	Bloomfield.
Sullivan	J. C. Kessinger	Milan	J. S. Montgomery	Milan.
Taney	Chas. W. Burdett	Branson	Elizabeth McIntyre	Branson.
Vernon	J. F. Robinson	Nevada	T. McLemore	Nevada.
Warren	W. J. Alexander	Marthasville	E. A. Fluesmeier	Wright City.
Washington	J. A. Eaton	Belgrade	W. S. Smith	Belgrade.
Wayne	J. P. Sebastain	Patterson	R. J. Owens	Mill Spring.
Webster	H. Highfill	Marshfield	Wm. R. Beatle	Marshfield.
Worth	W. A. Robertson	Denver	J. K. Phipps	Grant City.